AMS REALTIME

5.2 User Guide Addendum

Advanced Management Solutions, Inc.

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Preface

About this Manual

This manual covers new functionality or feature enhancements that have occurred to the AMS REALTIME family of products. Version 5.2 introduces some major new enhancements to AMS REALTIME Resources, Resources Server and the interface with Microsoft™ Project ™.

Some inevitable conceptual changes to the Client/Server system for Resources has prompted a change in reference to Enterprise. These tools now allow companies with a large investment in Microsoft Project to centralize project and resource data into a server managed database. From here, data can be summarized for reporting, distributed to the project community for Timecard tracking of actuals, adjustment of resource assignments and numerous other management tasks, all from a central database and all in real time. Because of this broadening of scope with regards to AMS REALTIME Server, the system is now being referred to as The Enterprise Server, and is mentioned as such throughout more recent documentation and publications.

Added to this the capability to update a timecard or perform other tasks from anywhere in the world via the web, the scope of project and resource management is now geared round a truly global solution.

This manual represents only some of the ground breaking work that is being done by AMS to enhance the Enterprise Solution. This release is an interim release (not maintenance) and will be followed by a more formal 'point' release in the near future. At this time the contents of this manual will be absorbed into the main documentation of the product set. However, for now it stands as an update to the current documentation and should be used in conjunction with it.

The Enterprise Solution

What is Enterprise Solution?

The Advanced Management Solutions' Microsoft Project Enterprise solution is an easy way to allow project and resource managers to collaborate in the creation and status of multiple projects across an organization. The main application controlling this activity is called Workforce Browser. This tool is activated from within Microsoft Project and allows the viewing and allocation of resources to and from tasks located either in the Microsoft Project file or out on the Enterprise Server.

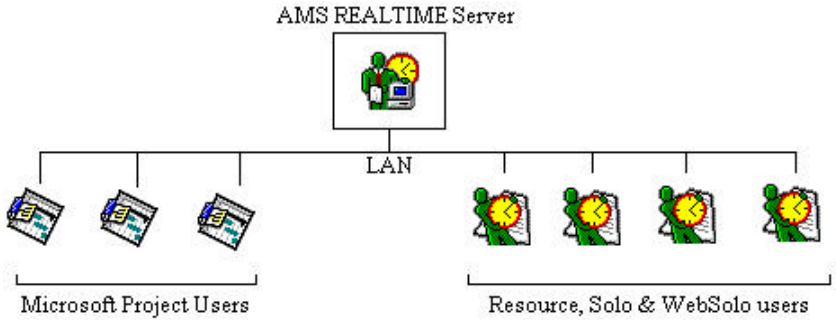
See the Workforce Browser User Guide for details about this product.

In simple terms, the enterprise solution allows a Microsoft Project user to login to a central AMS Server, submit project plans and retrieve status updates. The AMS Server manages the distribution of this project data to a community of project teams who can provide feedback to the Microsoft Project schedules. This feedback is typically timesheet information, giving detailed actual hours and progress on tasks, assignment of individuals to tasks and estimates of expected time to complete tasks.

Organizations with a large commitment to Microsoft Project can collect and organize the individual project schedules into an enterprise wide project and resource solution.

How does it work?

The AMS Enterprise Solution for Microsoft Project adds a special DLL to the Microsoft Project user's system directory. It also provides an updated global.mpt (template) file. With these two components added, the Microsoft Project user can login to the AMS REALTIME Server from within Microsoft Project and submit a project schedule. This is instantly available to a community of project teams and team leaders through the AMS REALTIME Resources, Solo, WebSolo and Projects applications. Team leaders can make resource assignments, team members can record the hours they work and estimate time to the completion of activities via a simple timesheet, and project managers can load these updates back into Microsoft Project to progress their schedules.



This system also offers a workforce management tool. This tool enables a central pool of resources to be assigned to tasks in Microsoft Project. It also allows resources that reside in a Microsoft Project file to be assigned to the central pool and other tasks in other projects.

Using AMS' Enterprise Solution for Microsoft Project

Enterprise

Enterprise Menu

This menu gives access to the functions that allow connection and operation with the AMS Enterprise server from within Microsoft Project. This menu is available in the Microsoft Project menu bar.

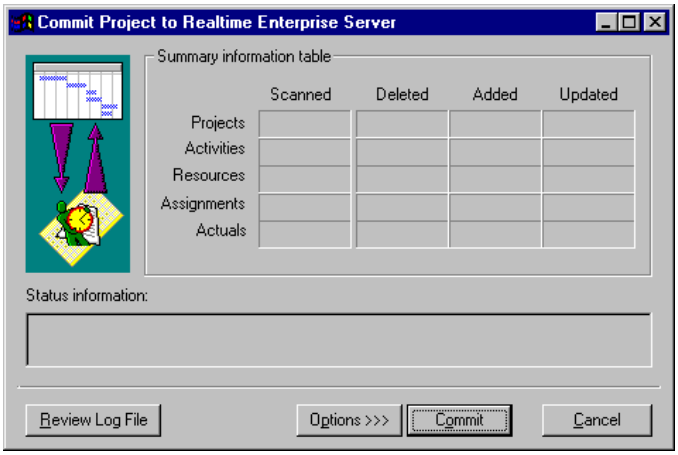
Commit

The **Commit** menu item allows a Microsoft Project schedule to be posted to the AMS REALTIME Server. It passes activity, resource and resource assignment information to the server. Once the server has this information, it can be immediately viewed and acted upon by project teams and team leaders using AMS REALTIME Resources, Projects, Solo or WebSolo.

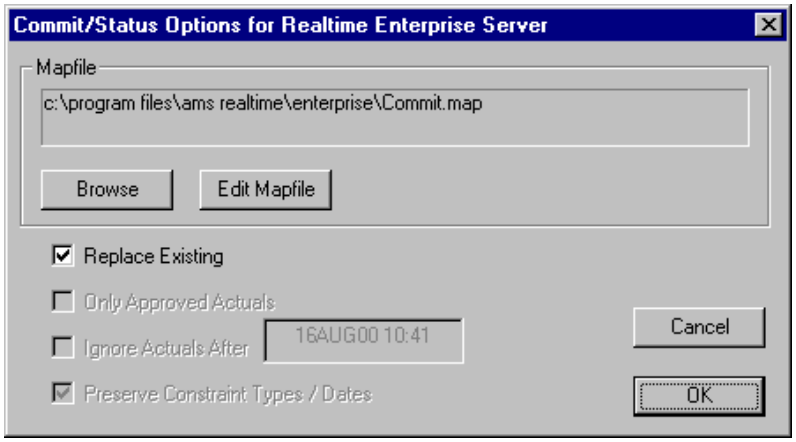
How to Commit a Workplan

Click on the **Enterprise** menu in Microsoft Project. If you are not already logged in to the server the logon dialog will appear. Logon as described in Logon.

1. Choose the Commit option in the Enterprise menu.
2. If the system has not yet been logged on to the server, the login dialog will appear. Enter a valid user name and password to enter the system. Then click the Login button to complete the login.
3. Next the commit dialog will appear. In here, choose the Options… button.



4. In the Options dialog, click on the Browse button to locate an appropriate map file. A map file is a text file containing instructions telling the system how to apply the fields of Microsoft Project to the fields in the enterprise server.



Note: The system is supplied with a sample Commit.map, Status.map and MSPSample.dst dataset file. These files are designed to operate with each other and can be used as a basis for customizing the Enterprise system

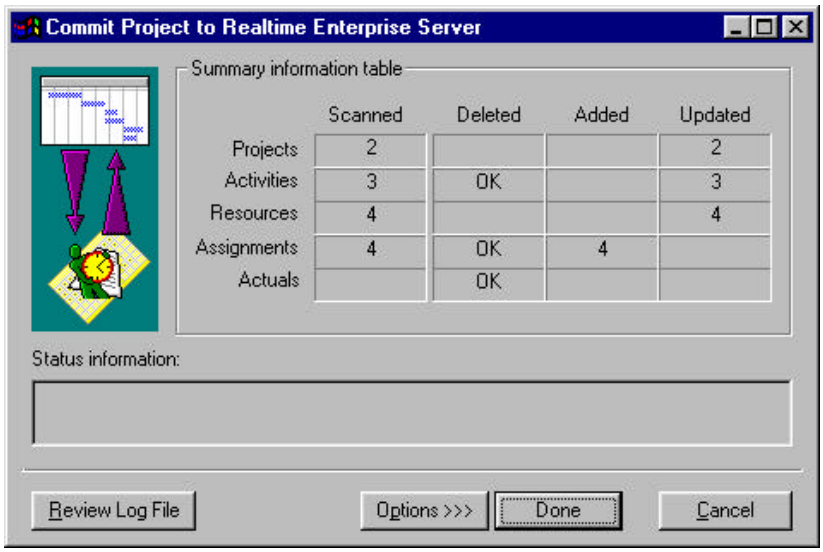
Once the appropriate map file has been specified, click the OK button. This will return to the Commit dialog.

In the commit dialog, click on the Commit button to submit the Microsoft Project schedule to the Enterprise system.

The project will be committed to the Enterprise Server and immediately be available to the project community.

Results

As the schedule is committed, the commit dialog will populate a simple table of fields to show what happened.



Scanned - this column shows what the commit function found to be present in the schedule. In the above example it found 2 open projects, with 3 activities, 4 resources, 4 resource assignments and no actuals.

Deleted - Don't panic, this column does not refer to deleting the contents of the schedule, it refers to a clearing mechanism within the commit function that clean out any existing references to elements from a previously committed schedule, before replacing them with an updated or appended element from the current schedule. This process is marked by an OK message in the 'Deleted' column.

Added - this column shows the total number of objects added to the Enterprise Server's database.

Updated - shows the total number of elements that where updated during the commit process.

Status

This feature allows the status of a workplan to be pulled down into the original Microsoft Project schedule. This will include progress calculations and actual hours worked on tasks by the individuals assigned to them.

To obtain the status of a Project schedule click on the Status option in the Enterprise menu in Microsoft Project.

In the resulting dialog box click the Options button to set the options for statusing the schedule.

Select the appropriate map file using the browser button.

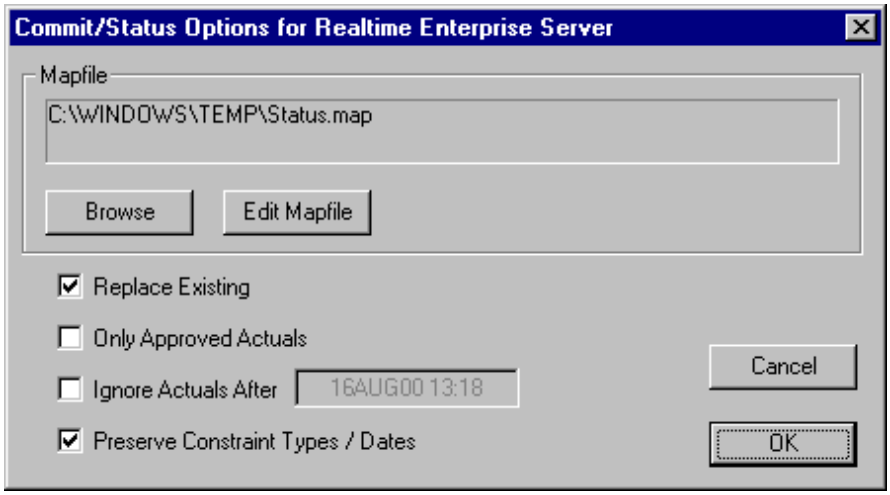
Click OK to complete the selection and return to the Status Dialog.

In the Status dialog, click on the Status button to start the status operation.

Options

The options dialog is used to select the map file used during a commit or status operation. It also gives control over the types of data that are allowed to return to the Microsoft Project schedule during a status operation.

During a status operation, the options dialog provides some additional check boxes. These check boxes are used to control the data that returns to the schedule.



Replace Existing - Checking this box indicates that tasks and assignments in the schedule will be updated by replacing them with more up-to-date versions of the same objects that reside on the server. For example and activity called Act001 with no progress will be replaced by Act001 on the server with 50% progress.

Only Approved Actuals - this switch indicates that only approved actuals (that is actuals reported on a timecard that have been marked as approved by a manager) will be used to update the progress of a schedule.

Ignore Actuals After [date] - this option allows actuals that have been posted after the specified date to be ignored by the status process. This is useful if some of the resources have posted time showing what they are going to do, not what they have actually done.

Preserve Constraint Types / Date - this setting ensures that the integrity of the links within the project and the dates are left in tact after the status.

Map Files

During a status or a commit, a map file is used to tell the system how to map Microsoft Project fields with the Enterprise Server's database fields. Because the Enterprise Server is customizable, map files are used to allow the map to be changed to reflect the actual structure of the Enterprise database.

The path to the appropriate map file is usually stored in the Configuration table in the Enterprise Server. The Commit and Status functions examine this table and display the path in the map file field at the top of the dialog. However, if the map files have not been defined in the configuration table, the Browser button can be used to locate the required map file.

The options dialog provides two buttons concerned with finding and editing a map file.

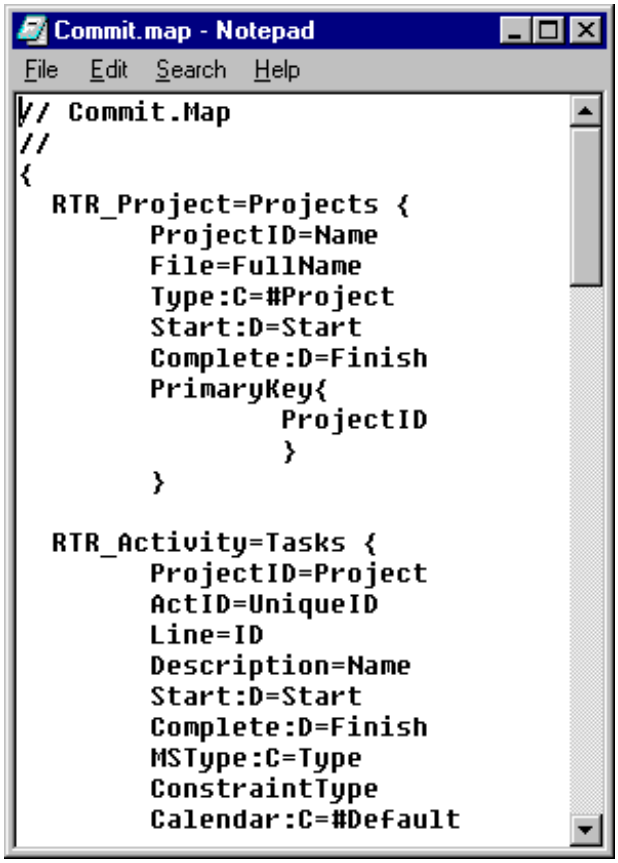
Use the Browse button to locate an appropriate map file.

Use the Edit Mapfile button to edit an existing map file.

Two sample map files are provided along with a database file. These can be used as a starting point for a system. They are installed into the Enterprise menu, by default this appears under the Program Files/AMS REALTIME directory. They are called COMMIT.MAP, STATUS.MAP and MSPSample.DST.

Care must be taken when editing the map file not to change the order of events. For example all the Workplan data must be processed before the Actuals are posted, otherwise the system will protest.

Here is a sample of the commit.map file. The following shows what the various part of the map file mean and how they are used.



Add a comment to the file

// comment

Open marker to start the definition of a dataset.

{

End marker to close the definitions of a dataset

}

To map an Enterprise Dataset to a Microsoft Project dataset

RTR_Project = Projects {

To map a field within the dataset

ProjectID=Name

Map Field Types

D = date (Example Start:D=Start)

C = character (text)

F = Float

I = Integer

L = Logical

S = Span (duration)

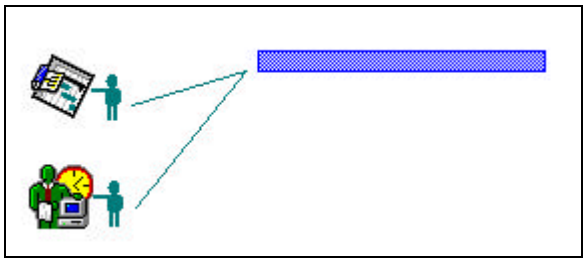
Note: Instructions are given at the bottom of the sample map files to assist in the modification and creation of new maps.

Status

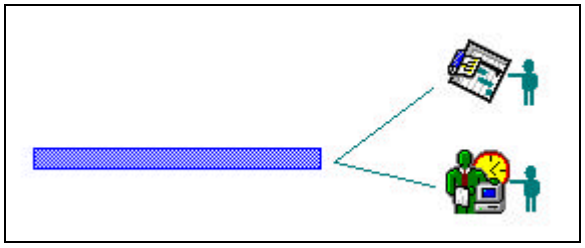
This feature allows the status of a workplan to be pulled down into the original Microsoft Project schedule. This will include progress calculations and actual hours worked on tasks by the individuals assigned to them.

Workforce Browser

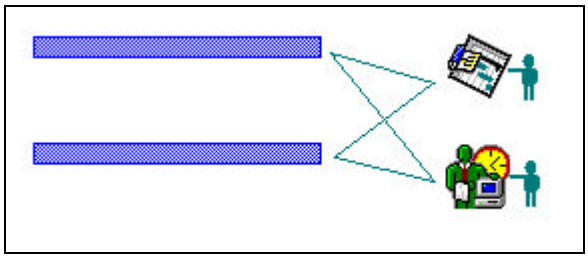
The Workforce Browser option runs an applet that allows the assignment of resources to tasks. It does this by giving a view of the resources available in both the Microsoft Project resource list and the central AMS Enterprise database. One or more resources can be selected from either of these sources and added to tasks. Also, one or more tasks can be selected and resources assigned to them. For example, a resource from the Enterprise database can be selected, it's availability can be examined and it can then be assigned to a task along with any other selected activities from the Enterprise database or the Microsoft Project file.



Selected resources from different sources being assigned to a task.



Selected task being assigned resources.



Multiple selected tasks being assigned to multiple selected resources.

The Workforce Browser makes centrally held resources in the Enterprise server available to every Microsoft Project user. This means that when a new project is being created, resources which need to work on the various tasks in that project can be downloaded into the Microsoft Project resource list.

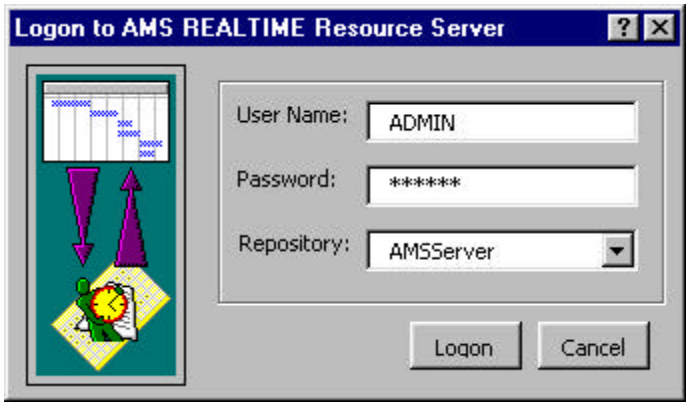
See the Workforce Browser section for details about how to use this product.

Logon

To share information between Microsoft Project and the AMS Enterprise Server, Microsoft Project must be logged on to the Server. Once a logon has been completed, information can be shared between the two systems.

To Log Microsoft Project on to the AMS Enterprise Server:

1. Click on the **Enterprise** menu and choose **Logon**.
2. Enter User Name, Password and from the pick-list, choose a repository name.
3. Click on the Logon button to connect to the Server.



Example showing a typical completed Logon dialog in Microsoft Project.

Note: A repository name is a name given to the AMS Enterprise Server for convenient identification.

Disconnect

Disconnects the Microsoft Project client from the enterprise server. To disconnect click on the **Enterprise** menu and choose the **Disconnect** option.

REALTIME Resource 5.2

Introduction

About This Document

Many new modules and functions have been added to the AMS REALTIME Enterprise Client (AMS REALTIME Resources). These modules and functions are in most cases advances in the operational aspects of existing objects such as time scales, calendars and table objects. These enhancements to the different class types are far reaching and require detailed explanation.

This is an AMS addendum publication only and is intended to document all the new functionality of the enterprise applications that appear in version 6.0.

These sections focus in high detail on individual classes in the Enterprise Client software. They are intended to be removed from this document and placed in their appropriate user guides for the 6.0 release. In the interim, this addendum will serve as a User Guide for new and existing customers who need to find out what's new in the release and how to use it to full effect.

Conventions

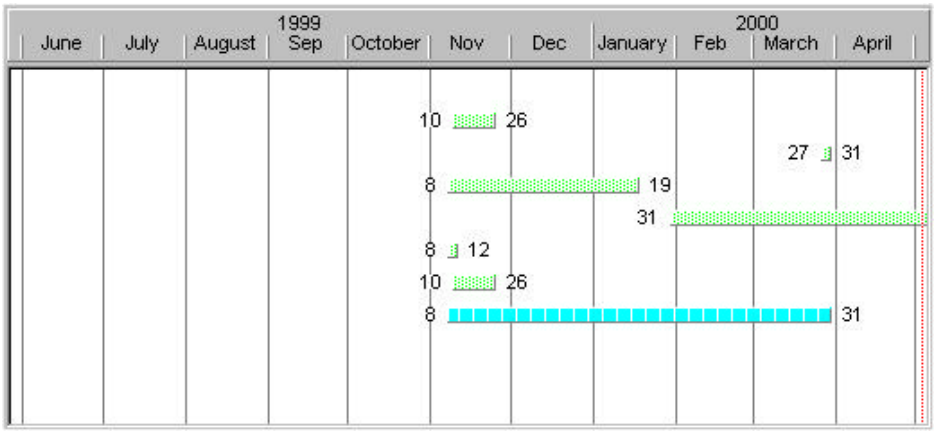
Most objects in the system react to both mouse and keyboard input. When a mouse and keyboard operation will affect the object the items are described separately using two symbols.

Instructions based on the use of a mouse.

Instructions based on the use of a keyboard.

Time Scale Functions

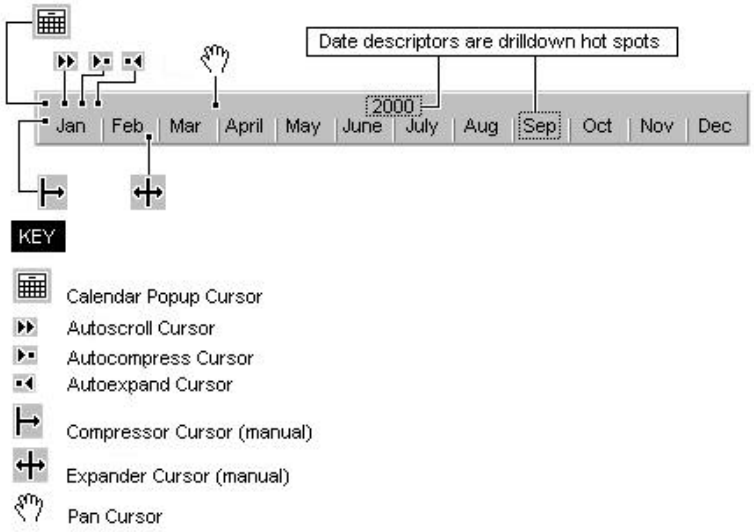
The time scale object can be manipulated in a number of ways using either the mouse or the keyboard. The time scale can be selected and then scrolled, stretched, compressed, compressed to the left, compressed to the right and drilled in or out for zooming.



The following text describes in detail how each of these operations can be achieved using either the mouse or the keyboard.

Hot Spot Key Diagram

Hot spots are areas of a program object that respond to mouse input. The time scale has a number of hot spots that allow the view to be completely changed without the need for filling in dates into dialog box fields. The diagram below illustrates the location of hot spots on the time scale.



Note: Hot spots are mirrored at each end of the time scale.

Selecting the time scale for manipulation

To select the time scale object using the mouse, click once anywhere on the time scale object. The timescale will appear to indent, indicating that it is currently selected.

Use the Tab key to change the selected object on the screen. Each press of the Tab key moves the selection to the next object in the tab sequence. Press the Tab key until the time scale object you wish to edit appears to indent.

Example

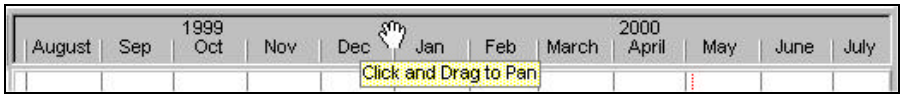
Unselected time scale appears raised.

Selected time scale appears indented.

Manipulating the time scale

Scrolling/panning

To move the time scale to the left or right without altering the magnification of the view, place the mouse cursor over the timescale. The mouse cursor will change to a hand shape. Click the mouse button and drag in the direction required. The time scale will scroll with the hand until the mouse stops and the button is released.



Autoscroll

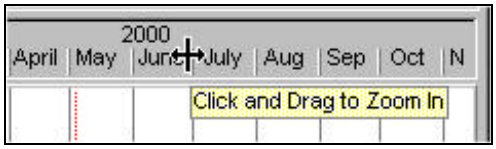
To move the time scale to the left or right without dragging the mouse, autoscroll can be used. Place the mouse cursor to the far left or far right of the time scale until the cursor changes to a double arrow. Click the mouse button to activate the autoscroll. The time scale will travel in the direction of the arrows until the mouse button is released.

Autoscroll to the right, go back through time.

Autoscroll to the left, go forward through time.

Expanding the time scale

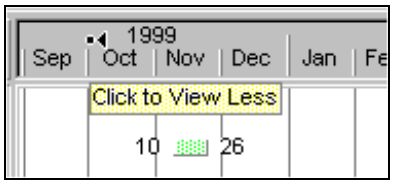
The time scale can be expanded in the following ways. To manually expand the time scale, place the mouse cursor over the vertical monthly separator bars; the cursor will change into a left/right arrow pointer. Click the mouse button and drag to the left or right to expand the time scale from that point. The cursor also places a vertical red bar at the point the mouse was clicked. As the mouse is dragged left or right the center part of the bar separates from the top and bottom of the bar and becomes the cursor. The top and bottom bar fragments remain in the original position helping the user see where the operation started from.



Getting ready to expand the view.

The above picture shows expanding the time scale to the left. The cursor can be seen here as a red vertical bar. The two shorter red bars indicate the cursors original starting point when a left drag started.

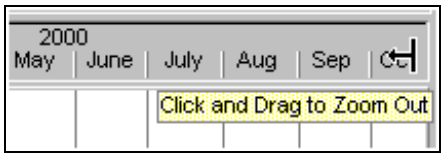
The view can also be expanded using the time scale auto expander hot spots located in the upper half of the time scale, about 1/2 an inch from each end of the time scale. Placing the mouse cursor over this hot spot changes the cursor to a dot and arrow cursor. Then expand the time scale by simply holding down the mouse button until the desired amount of zoom has been reached.



The above picture shows the time scale auto expander cursor. Clicking the mouse button here will expand the view to the left, whilst retaining the date on the right of the time scale. The equivalent hot spot on the right of the time scale does the reverse of the left, expanding in the other direction.

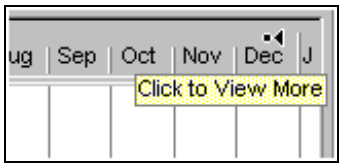
Compressing the timescale

To compress the time scale and display a longer time period, there are a couple of different ways to achieve this. Firstly, the mouse cursor can be placed at the far end of the time scale until the cursor changes into a left or right bar arrow. Click and drag the cursor towards the center of the screen to drag additional time in from that side. The starting date of the time scale opposite to the scale compressor will remain fixed.



The above picture shows the right hand bar arrow indicating that a click and drag operation in that direction will compress the time scale.

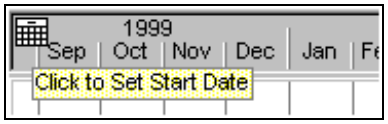
An alternative to this manual click and drag method is the Auto compressor feature. This is similar to the auto expander and simply works in the opposite direction.



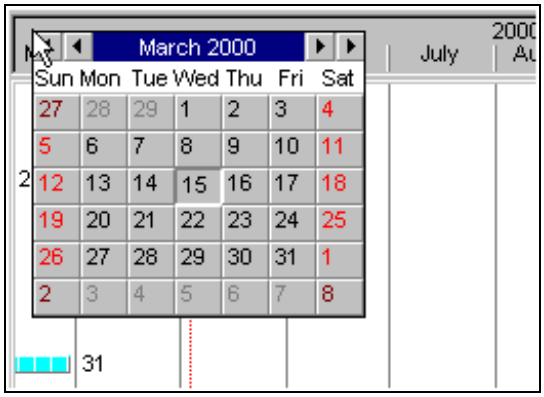
Place the mouse cursor mid height, about 1/4 inch from the end of the time scale. The auto compress cursor will appear. Click the mouse button and hold it down to see the time scale stepping in the direction if the arrow. The time scale will continue to compress until the mouse button is released.

Specifying the time scale

The time scale's start and complete date can be specified by absolute date. These specific dates can be entered by clicking on the calendar hot spot at the far ends of the time scale. A calendar cursor appears when the mouse is over the appropriate hot spot. Click the mouse button to invoke the little calendar object. The calendar object can then be navigated to find and enter the desired date. Clicking on the date button in the calendar sets the time scale position to that selected date.



Calendar cursor to invoke the calendar object.



Calendar object can be used to set a specific start or complete date for the time scale. In this case the start date is being modified.

Drilling in and out

Each of the text items on the time scale are also hot spots for mouse manipulation. These hot spots allow zooming operations to be performed to bring precise time scales immediately to the screen.

Double click the mouse button to drill into a specific year, quarter, month, day or hour depending on the level of zoom required.

For example, if a view of a specific week is required, and the view is currently set to years, first double click on the year to zoom to just that year. Then double click on the desired month in that year, and then finally on a specific day of the week.

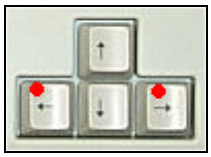
To zoom back out again, double click on the month, then the year.

Note: The cursor does not change when it passes over the text descriptor for a calendar object. Ignore whatever cursor is displayed and double click to drill down when over a date descriptor.

Scrolling/panning

To scroll the time scale to the left or right using the keyboard, first select the time scale object using the Tab key.

To scroll to the left and right, use the left and right arrow keys on the keyboard.



Expanding the time scale

To expand the time scale, hold down the Ctrl key and use the left and right arrow keys to activate the expansion.

Compressing the time scale

To compress the time scale, hold down the Shift key and use the left and right arrow keys to activate the compression.

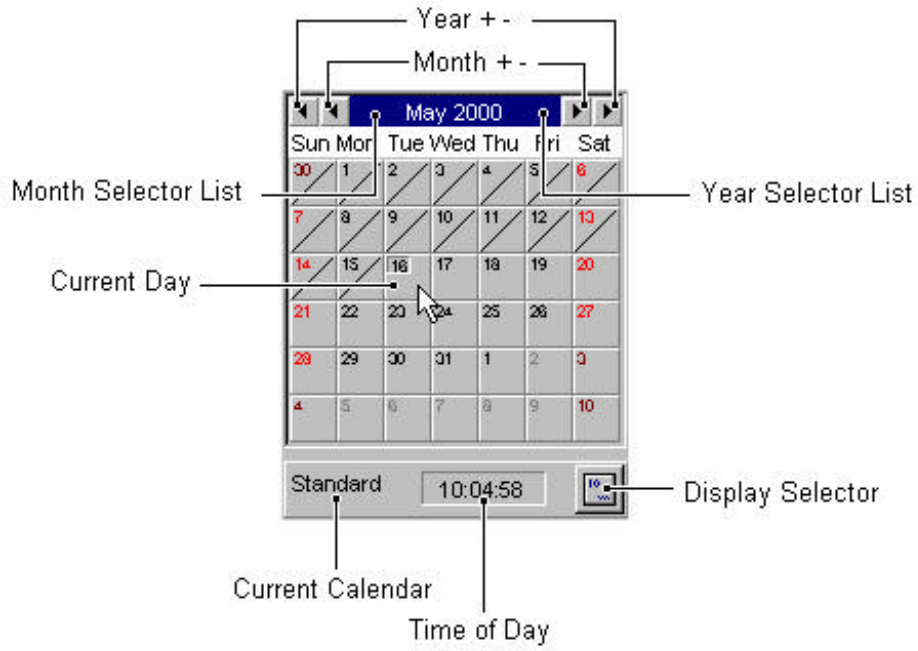
Calendar Module

The calendar module can be manipulated using either the mouse or the keyboard. It's functionality and interactivity with the system makes this module very useful, not just for changing the week view in a timesheet, but for altering dates on activities and time scale objects. The calendar object affects the program in different ways depending on where it is located. For example, when the calendar appears on a date field, selections from the calendar will enter a date in the field cell. If the calendar is selected on the time scale it will alter the start or end date of the time scale. The same calendar object is also located in the lower right hand side of the screen and affects the week displayed in a time scale.

The calendar module's functionality is available throughout the system. The capabilities described in this next section are universal and apply in most cases wherever this object appears.

Manipulating the Calendar Object

Months and Years are navigated using the left and right pointers at the top of the calendar object. The outer left and right pointers will increment the calendar by one year at a time in the forward or backward direction. The inner pointers will alter the calendar by one Month in either direction. To return to the current month, right click once in the blue header at the top of the calendar dialog.



Clicking in the blue header bar at the top of the calendar will display a list. Clicking to the left will give a list of Months to select. Clicking to the right will give a list of years to select. This allow the calendar to jump directly to a selected year, rather than stepping through them one by one.

Color Codes

Days indicated in black are working days for the current displayed month.

Light red numbers represent non working days in the current month.

Light gray numbers indicate dates in the previous or next month.

Dark red numbers indicate non working days in the previous or next month.

Symbols

The diagonal (markout) lines across a date indicated that it has passed.

Display Selector

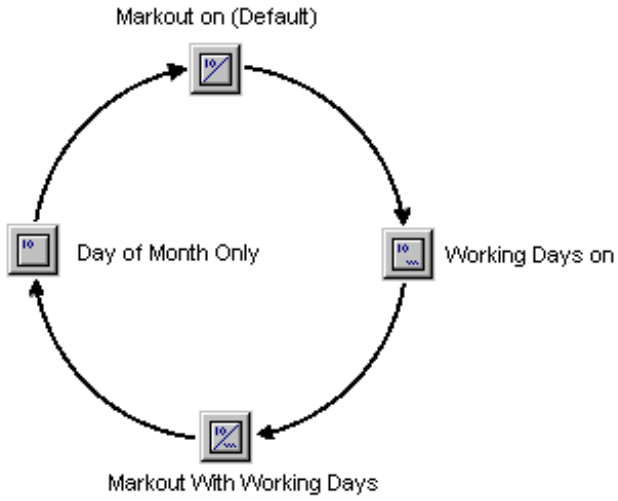
The display selector button steps through four possible mode of display for the calendar. Each successive click of the button takes the display to the next mode. The modes are as follows.

Markout on - default display when the program opens. Shows the day of the week plus a markout for any days that are behind current date.

Working Days on - shows the number of working days in the lower right hand portion of the day buttons. The working days number starts at 0 on the Base Date of the calendar.

Markout with Working Days - shows the working days and gives a markout though days passed.

Day of Month Only - gives only the day number in each day box with no markouts or working days showing.



Note: The display selector button shows the mode that will be selected if the button is clicked. For example, if the display is showing the Working Days on mode, that is what will happen if the button is clicked.

Selecting one or more days on the calendar.

The calendar day boxes can be used to select one or more dates. This feature is used for various functions depending on where the calendar is. For example, if the calendar is being used in the date field of a table, selecting a date box will apply that date to the selected cell in the table. If the calendar is being used with the Project Tab, it can be used to alter the duration of an activity.

In these cases the ability to select more than one consecutive date is desirable. To select multiple dates simply place the mouse pointer on the starting date and then click and drag the mouse across the calendar face. Each box the mouse pointer passes will be selected.

Calendar Manipulation using the keyboard.

With the calendar object selected, input from the keyboard can be used to change the selected days, months and years for the calendar.

Arrow keys - use the left, right, up and down arrow keys to move the selected day on the calendar object.

Left and Right arrow keys move the selected date one day back or forward respectively. The up and down keys move vertically changing the selection by one week.

Selecting a Range of Dates - This is done using the plus and minus keys that are usually present on the number pad area of most standard keyboards.

Clicking on the plus key will increase the selection by adding a day after the selected day with each successive key press. Clicking on the minus key will remove one day from the end of the selection, heading back towards the originally selected day.

Hold down the Shift key and use the plus and minus keys to add days from the selected day going back in time.

Use the Page up and Page down keys to skip an entire month, moving to the previous month or next month respectively.

Use the Home key to return to the current day.

Hold down the Shift key and use the Page Up and Page Down keys to change to the previous or next year.

Wallpaper

The blank areas that appear behind many of the tables in the product can be populated with bitmap images that repeat to create a wallpaper or texture effect. There are a number of standard themes that can be selected based on the number of colors supported by the client computer's graphics driver and card. Themes range from plain colors and 16 color designs to full 24 bit (millions of colors) images, depending on the available graphics card.

Standard wallpaper themes can also be overridden by a set of configuration switches that allow bitmaps in the programs directory to be selected and used. Therefore customers can create their own themes to use as backgrounds for the product, giving it the appropriate company identity and making the programs appearance unique.

Standard themes use images that have been incorporated into the programs dynamic link libraries (DLLs) and are selected by right clicking on the table's background and choosing a theme from the resulting list.

Customized Wallpaper

To override the standard themes and use company specific images or custom image designs, activate the following switches in the configuration file by removing the preceding semi-colon.

TCWALLPAPER=TC16.BMP
NOTEWALLPAPER=NOTES16.BMP
EXPWALLPAPER=EXP16.BMP
TLWALLPAPER=TSKLST16.BMP
AVWALLPAPER=PALLET11.BMP
PRJWALLPAPER=PALLET13.BMP
PRJFOLIOWALLPAPER=PORTF16.BMP
DBWALLPAPER=PALLET03.BMP
WPWALLPAPER=WORKP16.BMP

Configuration Description

If the desired bitmap file is stored in the program's executable directory, only the name of the bitmap need be specified. If the bitmap image is stored elsewhere on the computer, a full path must be used. For example if the bitmap files are stored in the windows system directory, the configuration setting would appear as follows;

TCWALLPAPER=C:\WINDOWS\SYSTEM\TC16.BMP

Override Switches

The following gives a description of each available configuration switch and where the image will appear in the program. These switches will override existing images and themes in the program. To return to the standard themes, place a semicolon in front of each of these switches.

TCWALLPAPER=*name*.BMP - Time card wallpaper.

NOTEWALLPAPER=*name*.BMP - Time card notes tables wallpaper.

EXPWALLPAPER=*name*.BMP - Time card expenses wallpaper.

TLWALLPAPER=*name*.BMP - Task List wallpaper.

AVWALLPAPER=*name*.BMP - Workplan tab, resource availability list wallpaper.

PRJWALLPAPER=*name*.BMP - Project tab, activity table wallpaper.

PRJFOLIOWALLPAPER=*name*.BMP - Portfolio tab, drilldown table wallpaper.

DBWALLPAPER=*name*.BMP - Database tab, data table wallpaper.

WPWALLPAPER=*name*.BMP - Workplan tab, allocation table wallpaper.

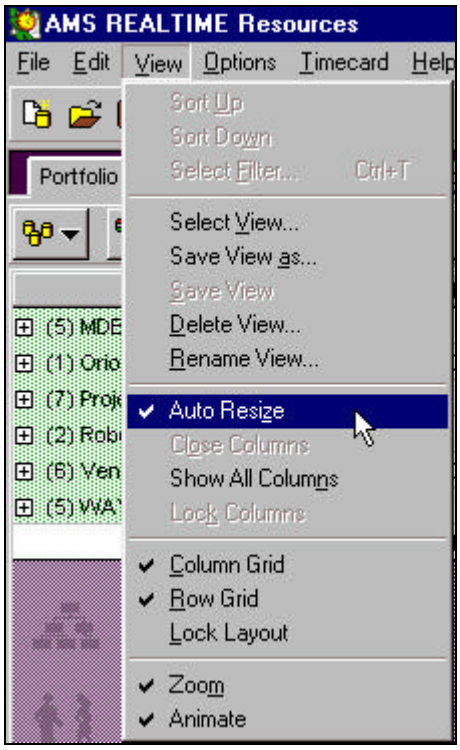
Table Auto Resize

Description

Auto Resize is a mode available in any selected table throughout the program. Auto Resize monitors the length of text or numbers in each of the columns that are in the visible display area. The column will automatically resize it's width to accommodate the longest text string or number visible. As the table is scrolled up or down, column widths are shortened or widened depending on content. This gives the advantage of not having unnecessarily wide columns throughout the display, when only a small number of cells contain very long text strings or numbers.

Usage

Auto Resize can be switched off in two ways. Firstly, any manual alteration of a column width will switch off the mode, leaving the table columns at a fixed width during any further scrolling. Secondly the function can be turned off and on using the Auto Resize menu item under the View menu.



Animate

The system offers two modes of operation for the way windows behave when being moved, re-scaled or resized using the mouse. These modes are toggled on and off using the Animate tool.

The Animate tool.

When Animate is on and an object is resized, it moves with the mouse pointer. When animate is switched off and an object is resized, the mouse simply pulls a dotted line out to represent the object's new size and shape. The object does not assume that shape until the mouse is let go.

This feature has been made optional as it may be advantageous to switch off the luxury of animation when manipulating tables that contain very large amounts of data.

Zoom

The zoom tool is used to toggle the lower portion of the Resources window on and off.

The Zoom tool.

If more real-estate is desired in the Resources window, click this button to toggle the Report area off.

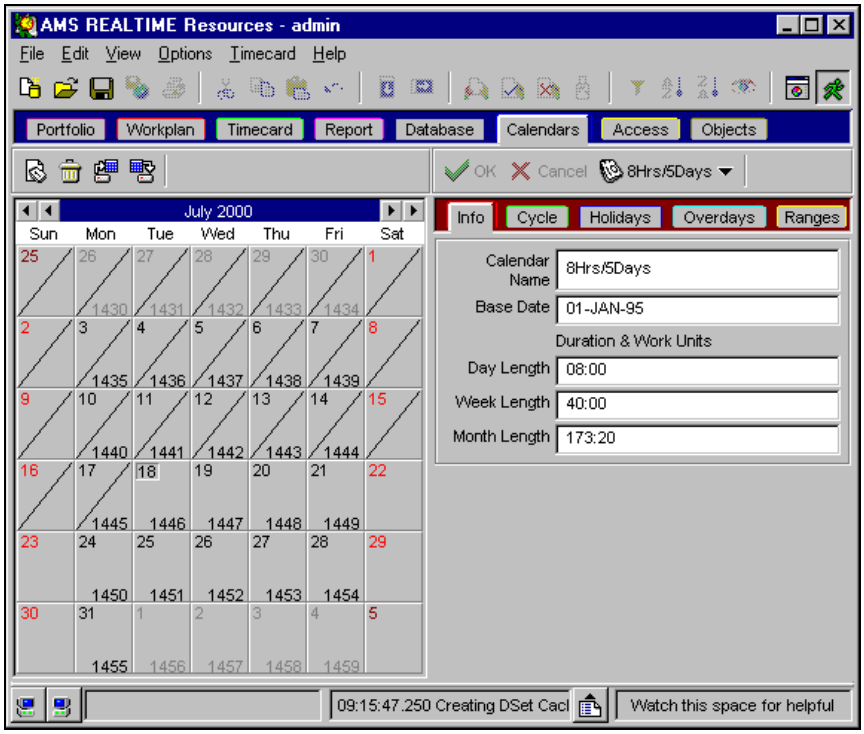
The Calendar Tab

Defining Working Time in the Calendar

Working time is defined in AMS REALTIME Resource using the Calendar Tab.

To access the Calendar click on the Calendar tab. Changing into this mode will always display the Default Calendar. See the section on Creating New Calendars, below.

The Calendar Mode Display

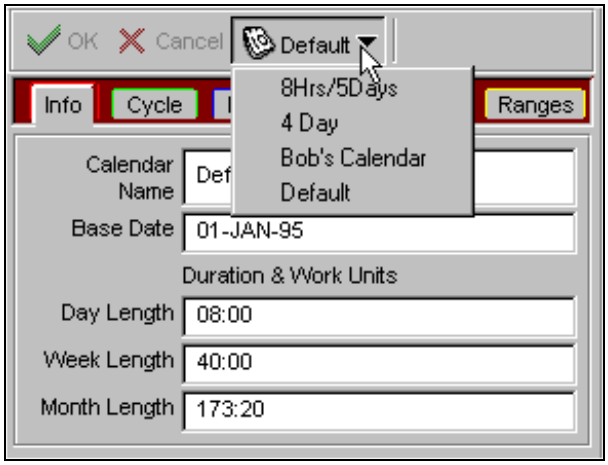

AMS REALTIME Resources - admin
File Edit View Options Timecard Help
Portfolio Workplan Timecard Report Database Calendars Access Objects
OK Cancel 8Hrs/5Days
July 2000
Sun Mon Tue Wed Thu Fri Sat
Info Cycle Holidays Overdays Ranges
Calendar Name 8Hrs/5Days
Base Date 01-JAN-95
Duration & Work Units
Day Length 08:00
Week Length 40:00
Month Length 173:20
09:15:47.250 Creating DSet Cacl
Watch this space for helpful

Calendar Mode shows a familiar-looking desk calendar covering a six-week period, with non-working days highlighted by displaying their dates in red. In the Default Calendar illustrated above, all Saturdays and Sundays are non-working days, and the other days are working days.

Dates that have already been worked, that is, those dates that are before the Now date, are shown crossed through with a diagonal markout.

To the right of the screen are a series of tabs that can be used to define specific information about each calendar. Above the calendar and the tabs are some calendar-specific icon tools that are covered in detail below.

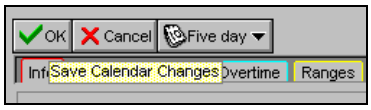
When the calendar tab is first entered, the Info tab is displayed. This shows the basic information for the current calendar. In the example above, the Calendar Name shows the current selected calendar is the Default Calendar. The Select Calendar icon (the rightmost button at the top of the screen) also shows the name of the current calendar. Clicking the icon will give a list of other calendars that can be selected.



For information on creating a new calendar, see the section on Creating a New Calendar, below.

Base Date

The Base Date is the point at which the calendar starts. The working days in the calendar are numbered sequentially, and the number displayed at the bottom right of each date box is the working day. This generic day numbering starts from the day after the Base Date, since the Base Date is zero.



Any changes made can be saved by clicking the Save Calendar Changes button. The Discard Calendar Changes button next to it (labeled Cancel) can be used to ensure that none of the changes are saved.

See the section on Sharing Calendar Information Between Projects for information on how calendars can be made available to other projects.

Working Time - Shifts

As well as being able to define which days are working or non-working, it is also possible to specify which hours are to be worked within the working day. These hours can be set up to reflect the shifts worked on the project.

In the Info Tab**,** the basic shift information is entered and displayed in the Day Length, Week Length and Month Length fields. These times are used to determine how many working hours there are in a working day, which is entered in the Day Length box. In this example, 8 hours. Depending on the number of working days in the week, the program will calculate the Week Length, in this case 40 working hours.

In a similar fashion, the Month Length shows the number of working hours in a month.

Note : Data entered in the Info Tab does not influence the information held or entered in the other tabs in the calendar dialog. These can usually be ignored as the important settings are the once made in the cycle and range tabs.

See the section Cycle below for further information on establishing shift patterns.

Moving Around the Calendar

To move around the calendar, in order to display a different month or year, use the left and right arrows above the calendar. The outer left and right arrow buttons will step through one year intervals. The inner two arrow buttons step through the months of the selected year.

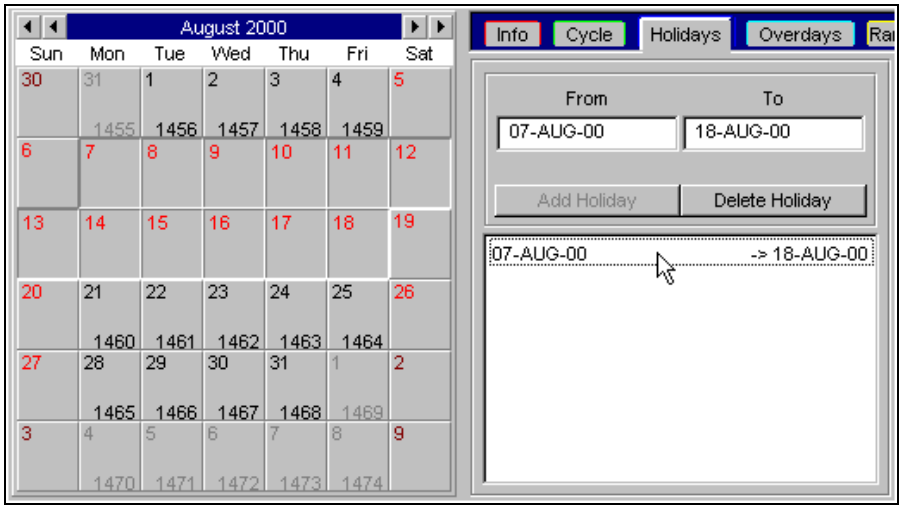
Selecting Dates

Dates can be selected in a variety of ways:

- Select an individual day by clicking on its date box. The date selected is highlighted by showing the date box as depressed.
- Select a range of dates by dragging across the date boxes. All the dates selected are highlighted by showing the date boxes depressed.
- Select a day of the week, for example all Saturdays, or all Wednesdays, by clicking on the day name at the top of the calendar. This highlights the day name, but does not show the specific dates selected.

Changing Working Days

To change specific holidays from working days to non-working days, or vice versa, choose the Holidays tab. Select the appropriate date on the calendar and click the Holidays tab on the right of the screen.

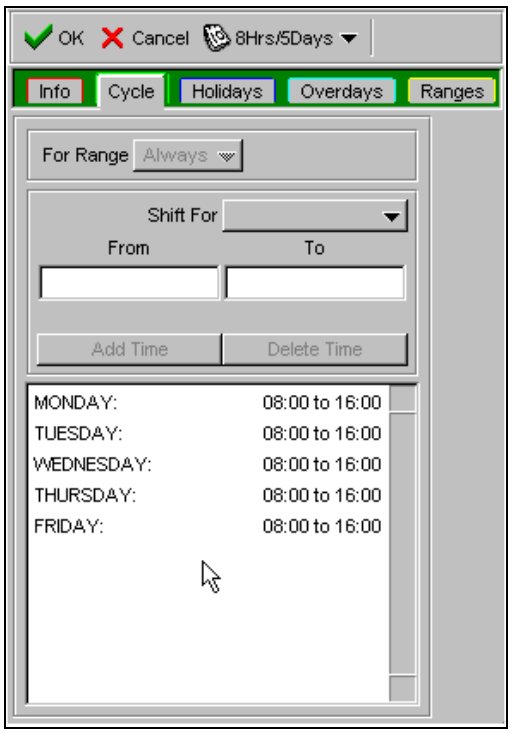


The screen changes to show the Holidays dialog. The date or date range selected is shown in the From and To boxes. Click **Add Holiday** to make these days non-working holidays. Alternatively, click **Delete Holiday** to change the selected days from holidays to working days.

Note: Individual date changes only apply to the current year, so remember to set annual holidays for each year in the project duration.

Changing Shifts

In addition to changing the days when work will be done, the time during the day can be changed as well. This is important for determining the activity duration and for many advanced calculations. To change the shift, click on the **Cycle** tab. The display changes to a list box, From and To fields and a Range selection button. Days of the week can be entered into the From and To fields for shift time entry.



Select the day by clicking on the Shift For box and selecting a day from the drop-down list.

Enter the times for the shift. To define the entire day as a shift, enter 00:00 for the From time and 24:00 for the To time. Then click Add Time to set these times as the shift for that day.

A split shift cycle can be created by defining successive periods. For example, a lunch break can be specified on the calendar by defining a shift from 07:30 to 11:30 for Monday, and then adding a second shift period from 12:30 to 4:30 for Monday. Just specify the first period, click on Add Time, and repeat the process for the second period.

To change the shifts for a day, select the day in the list at the bottom of the dialog, and click Delete Time. Then add the new times as discussed above.

Any cycle of shift that is defined is specific to a defined time period. For example, the cycle could be defined as being valid from June 1st to September. 30th. The date range is defined using the Range tab, see the Ranges section below.

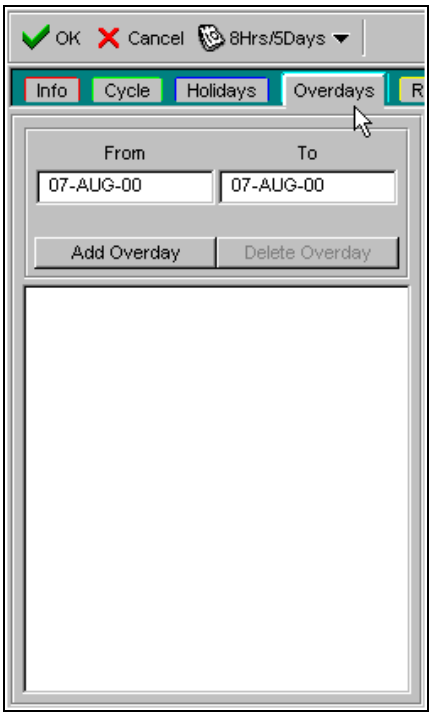
The Range for this Cycle is selected by using the Range button to select from a drop-down list.

Combining Ranges and Cycles in this way permits you to set up very sophisticated and complex patterns of work. A detailed example of how this could be achieved is provided in the section on Worked Examples below.

Defining Overdays

The program also allows the definition of working day exceptions, which are specific working days that would normally be non-working. These extra hours or days are entered as overdays.

To define overdays (working days that are normally non-working, but will be worked as an exception) click the Overtime tab. Either select a date on the calendar and enter the dates in the From and To boxes.



Click on the **Add Overdays** button. The exception working days will be displayed in the list at the bottom of the dialog.

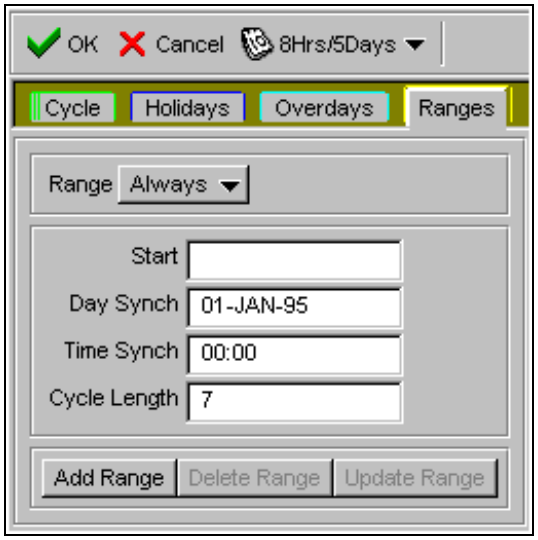
To remove or change existing overday definitions, select the appropriate date at the bottom of the dialog and click **Delete Overdays**.

Specifying the Range of Dates

A project may use standard shift patterns throughout its whole duration. On the other hand, it could be that shift patterns, overdays and holidays will change from time to time throughout the project. For example one set of shift patterns could be required during the summer, and a different working shift pattern be required for the winter.

The product allows the specification of a range of dates for which the other information is applied.

Click the **Ranges** tab to access the Range control fields.



Use the **Range** button to select an existing range or click Add Range to create a new range. The Always Range is the default range, which means that any cycle, holiday or overday information is applied to all dates.

The date on which the Range is to start operating is entered in the Start box.

The Synch date is the first date in the beginning of a cycle for the new calendar range. For example, the summer calendar might start on June 21, but if that is a Wednesday, and the cycle starts on a Monday, the sync date can be set for June 26, which is the next Monday.

Synch dates become clearer when they are applied to calendars with odd cycles (instead of a weekly shift pattern). If a 10 day shift cycle is defined, the system needs a way to determine which day is which, since there will be more than one Monday in the pattern.

For example, a range has been defined that uses a 10 day Cycle Length. Enter a Start date of 01JUN97 and a Synch date of 11JUN97. When the Cycle for this range is examined, Day 1 of 10, Day 2 of 10, Day 3 of 10 will be seen in the Shift For pop-up, where previously the days of the week where visible.

Specify the length of the cycle in the Cycle Length box. The default is 7, which means that the shift times can be set using the calendar week specifically for this Range.

The section below on Worked Examples shows how to combine Range and Cycle information to create complex working patterns for a project.

Creating a New Calendar

As well as making changes to existing Calendars, new calendar can be created in the calendar tab.

Enter the calendar tab, where the display will show the Default calendar.

Click the New Calendar icon at the left-hand side of the screen.

The Info tab changes to display the Calendar Name as NewCalendar. Edit this field to enter the name required.

From now on, the Select Calendar icon will include this new calendar as part of the selection list. Any changes made on any other tab apply to the new calendar.

Worked Examples

The examples below show how to combine the calendars different facilities to define any type of working pattern.

The two examples below are used to show how each aspect of the calendar for two different working patterns is defined. These might represent two different sites where project work is carried out, each of which works a different shift pattern.

For the purposes of this guide the assumption has been made that it is the same organization and site carrying out all the project work. The first example is based on a vacation to France project, where we will be working at different times depending on the phase of the project, i.e. Planning or Traveling. The second example shows how the working patterns may vary depending on the time of year.

Example 1

While we are still planning, we shall have to work on this project during the evenings and at weekends. Once we are Traveling, we shall be working on the project all day.

Pattern 1

During the planning phase, we shall work from Monday through Friday from 7.00 PM to 9.00 PM., and on Saturday and Sunday from 12.00 midday to 4.00 PM.

Pattern 2

Once we are traveling, we expect to be ‘at work’ on the project from 9.00 am to 5.00 PM.

To define these Patterns in AMS REALTIME Projects ....

- Create a new calendar called Vacation.
- On the Info Tab set the Base Date as 01JAN97
- Click the Cycle tab and change Saturdays and Sundays into working days by adding a shift for each day. This is done by selecting the day of the week from the pop-up next to the Shift For label. Then enter From and To times (the beginning and end of the shift in 24 hour time). Then click on the Add Time button.

- Click the Ranges tab. In the Start field, enter the date on which your vacation will start. The Synch date is the date of the first actual working day in the new work cycle, which may not necessarily be the same as the "official" start of the new calendar range. Then click on the Add Range button. Notice that the Range button changes from Always to a date with an open-ended arrow, which indicates the new calendar range.
- Go back to the Cycle tab and choose the new range. Set the working hours for Monday through Friday as From 19:00 To 21:00. Click Add Time for each day to enter the times. Set the working hours for Saturday and Sunday as From 12:00 To 16:00. (Note that shift cycle times can not overlap. If you are changing a range for a period that is already defined, use the Delete Time button for that cycle before you enter the new shift period.)
- When you have finished entering all the information, click OK to Save Calendar Changes.

Example 2

In this example, we are dealing with a project where the work is based outdoors, so we want to be able to take advantage of the better weather in the summer.

Pattern 1

In the colder, darker months of the year, we will be limited in how long we can work in daylight.

The working pattern is as follows:

The 'winter pattern' is worked from October to March.

In the winter, we work Monday through Saturday, from 9.00 AM to 4.00 PM.

Pattern 2

In the summer months, from April to September, we can work much longer hours each day, but give workers more time off at the weekend to compensate.

The normal hours will be Monday through Friday, from 8:00 AM to 6:00 PM.

To define these Patterns in AMS REALTIME Projects

- Create a new calendar called Outside.
- On the Info Tab set the Base Date as 01OCT97
- Click the Cycle tab and change Saturday into a working day. This is done by choosing Saturday from the pop-up next to the Shift For label. Then enter the shift time From 09:00 To 16:00, and click on the Add Time button.
- Delete all of the current Shift Times for Monday through Friday. Select Monday and enter a Shift Time From 09:00 To 16:00. Click on Add Time button.
- Now add the new Shift Time for Tuesday through Friday.
- Click the Ranges tab. Enter a Start of 01APR98, which is the date on which our new range starts.
- Since the cycle for this range starts on a Monday, enter 06Apr98 as the Synch entry.
- The summer working day schedule of 5 working days will still be applied to a weekly schedule, so enter **7** for the Cycle Length.

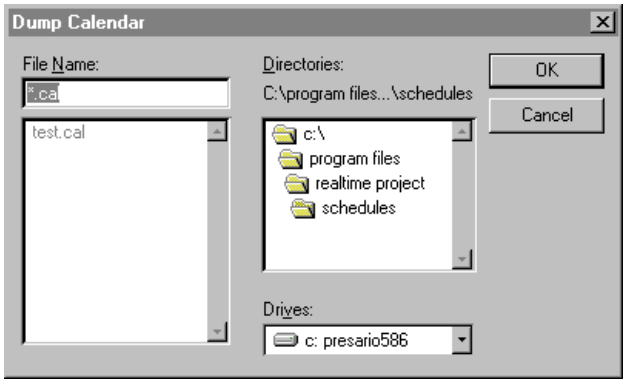
- Click on the Add Range button. Notice that the current Range is now From 01APR98 ->. If we click on the Range pop-up, we now have two entries: the one previously mentioned and the first range, which is now called -> To 01APR98.
- Now we can define the Shift Cycle for the new range. Click on the Cycle tab.
- Select the From 01APR98 ->. Range using the Range button
- Set the working hours for each day of the week, except Sunday, as From 08:00 To 18:00. Click Add Time for each day to enter the times. After you have added the first day, you can also use the Add Next Day button to make this process faster.
- When you have finished entering all the information, click OK to Save Calendar Changes.

Sharing Calendar Info. Between Projects

Once a calendar has been created it can be exported to a file and then shared with other AMS programs.

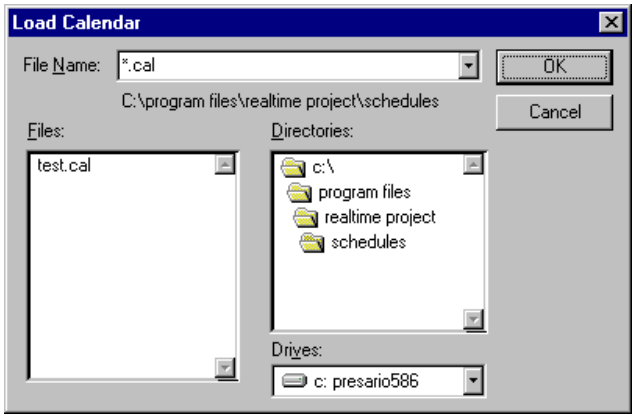
Once all calendar modifications have been made, click the Dump Calendar button.

The File Selector dialog for the operating system is displayed, prompting for the name of the file in which the calendar will be stored. By default the file will have an extension of .cal



To load the calendar into any other system, open that project, change to Calendar mode and click Load Calendar. The program prompts for the name of the file to load. Click OK.

The Load Calendar tool.



Assigning Calendars

Calendars are assigned to project tasks in a number of areas. It is typically done in one of the table views in the calendar column. Selecting a cell in the calendar column causes a popup list of available calendars to appear. These can be assigned to various items in the project database by clicking on the list.

To assign a calendar to an activity for example, the activity table is opened. Click on the calendar column in the row that corresponds to the task. From the resulting popup, select the desired calendar by clicking on its name in the list. This action assigns the calendar to the task.

Calendar Hierarchy

Calendars are regarded in a hierarchical order by the program. That is to say, the program checks certain items for a calendar against which to calculate the items final duration or work commitment.

When a new project is loaded, the program first checks for a calendar against the activity. If no calendar is defined against the activity, the program next checks for a resource calendar. If no resource calendar is located, the program will use the default calendar defined for the system.

If one or more of the items has a calendar, the priority is as follows;

Resource calendars - a resource calendar will override an activity calendar.

Activity calendars - an activity calendar will override the default calendar.

Default calendar - the default calendar will be used only if no other calendars have been assigned to a resource or activity item.

Database Tab

Formerly the Update and Define Tabs

In AMS REALTIME Resources 5.1.5 and earlier, the functionality of the database tab was divided between the Update and Define tabs. In version 5.2 and later, these two tabs have been merged into the Database tab.

The following section illustrates how the new Database tab is used.

Purpose

The database tab is an important administrative tool used in the setup of a database's tables and fields. Three main items can be addressed using the database tab.

1. Display and update data in the table.
2. Create or modify filters for existing tables.
3. Create and define datasets and table fields.

These break down into three modes within the database tab. These are; Update, Filter and Define.

Careful planning is recommended before attempting to set up a database schema for the enterprise system. The following text gives details of how to create and modify tables using the Database tab.

Database Tab Functions

Dataset select tool.

The dataset select tool allows the existing datasets to be selected for display or modification. When the database tab is first entered there is no table selected. Use this tool to select the required dataset.

Update command tool.

To set the table for update, click on the update button shown above. This will allow current database content to be modified. New records can also be added when the database is in update mode.

Filter command tool.

Filters are used in the program to sort, select and order data into a more manageable format for viewing and reporting. When in Filter mode, changes can be made and new filters can be added to the system to assist in the organization of large amounts of data.

Define command tool.

Define mode is used to specify the tables and dataset that will exist in the system. The define tool is used to place the database tab in the mode to enter database column and field definitions.

Rename dataset tool.

Use this tool to rename the currently selected dataset. Caution should be employed using this tool as changing dataset names that are referenced by other tables will cause the program to fail in some circumstances.

Create dataset tool.

Use this tool to create and define a completely new dataset.

Delete dataset tool.

This tool allows the deletion of an existing dataset in the database. This tool should be used with caution as deleting datasets referenced by other datasets can cause the program to fail in certain circumstances.

Selecting a Dataset

To select a dataset for display or modification;

1. Click on the

Dataset selection tool.
2. From the resulting list select the desired dataset to display.

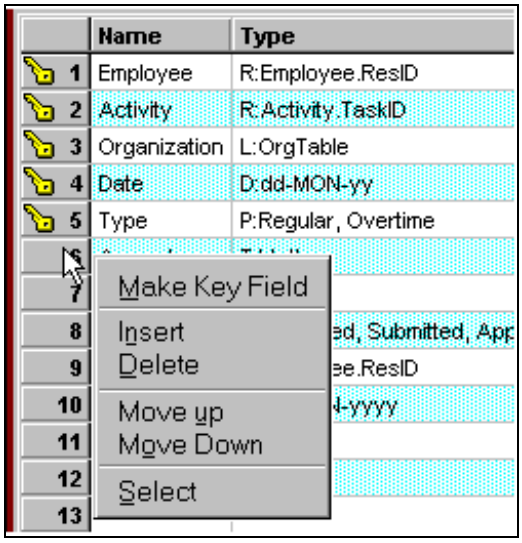
The desired dataset will open into the Database tab. The data can now be manipulated in the table, depending on the mode selection, i.e. Update, Filter or Define.

Defining a Key Field

Key fields are fields that contain a unique set of records and can be used to cross-reference other datasets of identical unique fields.

	Name	Type	Attributes
1	Employee	R:Employee.ResID	WorkplanResource
2	Activity	R:Activity.TaskID	WorkplanTask
3	Type	P:Regular, Overtime	WorkplanType
4	Baseline	T:hh.th	WorkplanPlanned
5	Delta	T:hh.th	WorkplanETC

Key fields can be identified by the key symbol in the row header of the table. To define a key field, right-click in the row header for the table.



From the resulting list, select the Make Key Field option. A key icon will appear in the row header indicating that this is now a key field.

To define a key field using the keyboard and mouse, hold down the Alt key and click in the field name.

The Basic AMS REALTIME Resources Datasets

The four basic text datasets are information sets containing Project, Activity, Employee and Organization information.

The fields named Actuals and Workplan are the standard numeric type (i.e., containing time-phased data) datasets. These contain the source data that appears in Workplan mode and the Timecard screen. As with the standard text datasets, the basic fields, data types and attributes should not be redefined. There is some capacity to add additional fields to these numeric datasets, but only within the existing slot reference structure.

New datasets can also be created to hold information to support project and resource management systems, such as customer information, billing and expense data, or document control information. The product can support up to 41 datasets in total (the 5 standard datasets plus up to 36 user-defined datasets).

There is no implied order to dataset fields. Fields may be inserted or deleted, but if a field is deleted, all corresponding data is lost. Each field has a list of possible data types. Reference field types allow selection of fields from other datasets. Virtual field types automatically create the data from defined component fields or subfields.

Creating Dataset Field Definitions

The first field in the dataset should be a unique record identifier. To define the fields in a dataset, select the dataset name and choose Define (note that only users with Full access to the dataset table definition will be able make database definitions). Enter the field name, and then tab over to choose a data type.

Click in the Type field to get a menu popup that will prompt for the data type, size and format, or **Ctrl**-*click* to get the cursor and edit or enter the type manually. The types are shown in the definition using the following format:

TypeCode [Size] [: FormatControl].

Data Types and Format Controls

The following table describes the data types and formats which are available:

Type	Size	FormatCtrl	Sample	Description
Number	20		N	Up to 20 numeric characters
Alpha	1-255		A255	Up to 255 chars of text
		_ (underscore)	A25:_	Up to 25 chars of text with all spaces removed
		U	A12:U	Up to 12 chars of upper case text
			A:_U	Default of up to 20 chars of upper case text with spaces removed
Date		dd	D:dd	Day
		ddMON	D:ddMON	Day MonthName3
		ddMONyy	D:ddMONyy	Day MonthName3 Year
		ddDAY	D:ddDAY	Day DayofWeek
		dd-MON-yy	D:dd-MON-yy	Day-MonthName-Year2
		dd-MON-yyyy	D:dd-MON-yyyy	Day-MonthName-Year4
		DAY	D:DAY	DayofWeek
		mm/dd	D:mm/dd	Month/Day
		mm/dd/yy	D:mm/dd/yy	Month/Day/Year2
		yymmdd	D:yymmdd	Year2 Month Day
		yyyymmdd	D:yyyymmdd	Year4 Month Day
Time		hh:mm	T:hh:mm	Hours:Minutes
		hh.t	T:hh.t	Hours.Tenths
		hh:th	T:hh:th	Hours.TenthsHundreds
		hh	T:hh	Hours
		ppp%	T:ppp%	Percentage of Day
		FTE	T:FTE	Full Time Equivalent (Unit of availability)
		Units	T:Units	XXXX
Reference	20 is default max		R:Project.Name	Provide a popup of the field contents of the Name field from the Project dataset.
			R25:Customer.ID	Provide a popup of the field contents (25 characters long) of the ID field of Customer dataset
Virtual			V:Last + “, “ + First	Populate this field (up to 20 chars) with Last, a comma, and First
			V40:Project.Name + ID	Populate this field (up to 40 chars) with the Project Name field plus ID
			V30:Last[1:5] + ID	Populate this field (up to 30 chars) with the first 5 chars of Last plus ID

Type	Size	FormatCtrl	Sample	Description
Lookup			L:Org.Code	Lookup table field to establish data contents by a date period
Calculate			C:BCWS-BCWP	Calculate fields using standard or special operators. Special operators are % (percentage) and # (percent of total), standard operators + - * /
Pick			P:Task MS NP	Provide a popup of Task, MS and NP for data selection.
Group Operation			C:Min(Workplan, Date)	Calculate the Min, Max, Sum, or Count (record count) of a numeric dataset field (Actuals or Workplan).
Drilldown			W40:Programs. Name=WBS_IT	An activity reference field to a WBS source table.
Child			K:WBS_IT. SubProject	A field that identifies a datasource table as having a WBS level beneath (a child table).
Parent			O:WBS_IT. Program	A field that identifies a datasource table as having a WBS level above (a parent table). This can also be used to create a WBS subset branch.
Calendar			Julian Calendar	A field that stores a working calendar.
Access			?	Future use - popup of defined access levels.
Progress			S	Future use - enforce percentage boundaries of 0 - 100%.
Filter			F:Activity	Future use - popup of defined filter names.
Updated by			U:Employee.name	Name of person who updated record.
Update Time			Z:ddMONyy	Date and time the record was updated.
Record Number			#	Populate field with record number.
Binary Large Objects			B:*.arp	Store a binary file in the database.

Note: Date and time formats are for display purposes. Dates can be entered using any valid date format containing the month, year, and day. Virtual and Reference fields default to 20 characters unless specified otherwise. If a Virtual or Reference type string is longer than the specified number, the remaining string is ignored.

Database Attributes

What are database attributes?

Database Attributes are used by the system to identify the role that certain fields, in certain datasets play.

To express that in simple terms, the system needs to know if a field exists as simply a general place to store data, or whether the field has a special role within the system.

For example, the activity dataset has a TaskStart attribute associated with one of the fields in the Activity dataset. This attribute tells the system which of the fields in the dataset it should treat as the planned start date for a task. After all, there could be other date fields in that dataset. Having attributes gives the system much more flexibility for the system administrator. If the system administrator wishes to use a different field for TaskStart, the attribute can simply be moved to that field.

Attributes are generally associated with the standard datasets that are provided with the system. These are, Projects, Activities, Employee, Organization, Workplan, Actuals and Expenses.

These tables must exist in the database for it to function correctly. Also the attributes must also be appropriately set within these tables. Customization of the system to meet with a company's business practices can be achieved by either adding to these existing dataset, or creating new datasets. AMS do not recommend removing any of the existing standard tables, or any components therein without consultation with an AMS representative.

HOWTO: set a database attribute

To set a database attribute, do the following,

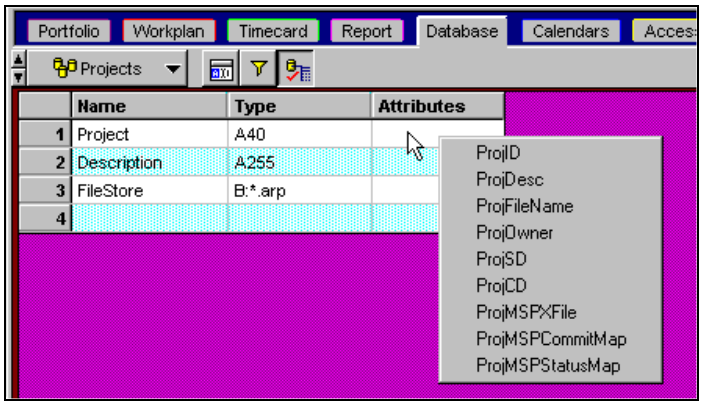
1. Click on the Database tab to open it.
2. Select the dataset you wish to modify.
3. Click on the define tool to enter define mode.
4. Locate the field who's attribute is to be changed.
5. Click in the field under the attribute column.
6. From the resulting list, select the desired attribute.

The attribute will now appear next to the selected field.

Project Dataset Attributes

The project dataset is a high level table used to identify the projects that exist within the system. Tasks in the database are grouped by the projects that own them.

The project dataset uses attributes to identify the role of certain fields to the system. The following diagram and table give a brief description of each of the available attributes.



Attribute	Description
ProjID	Field containing the project's unique ID
ProjDesc	Field containing the project's description.
ProjFileName	Project original file name if imported from AMS REALTIME Projects.
ProjOwner	Field containing the name of the project owner.
ProjSD	Identifies the field containing the Project Start Date
ProjCD	Identifies the field containing the Project Complete Date
ProjMSPXFile	Microsoft Project .mpp file if imported from that system.
ProjMSPCommitMap	Identifies the field containing the name of the map file used when committing a plan from Microsoft Project to the Enterprise Server.
ProjMSPStatusMap	Identifies the field containing the name of the map file used when obtaining the status of a Microsoft Project schedule based on updates extracted from the enterprise server.

Actuals Dataset Attributes

The basic Actual fields required by the system are already defined in the activity dataset. Here is a brief listing and description of the currently available attributes.

Attribute	Description
ActualsResource	Name of ID of person performing the work.
ActualsAuditWho	Name of person that changed any actuals after submission.
ActualsTask	Task name
ActualsOrg	Organizational owner of task
ActualsCorrection	Identifies a corrected actual
ActualsType	Identifies the type of actual
ActualsDate	Identifies the original date the actual was recorded
ActualsAuditWhen	Identifies the date the actual was changed
ActualsAmount	Identifies the number of hours submitted to the record
ActualsStatus	Actual's status, e.g. Recorded, Submitted, Approved or Rejected
Custom	Assign a specific memory portion for the field to use. This is mostly reserved for user defined additional fields.

Defining the Activity Dataset

The basic activity fields that are required by the product are already defined in the Activity dataset. While these names can be modified, extreme care must be taken to change all other related field references across all datasets if changes are made. The contents of the Attribute field are used to differentiate special purpose fields.

To add new fields to the Activity dataset, click in the first empty line under the **Name** column. Type in the new field name.

Data Types

Click on the same line under the **Type** column. A popup will appear containing all of the data types available. *Click* on the appropriate data type.

Alpha

If the **Alpha** type is selected, a prompt will appear so that the maximum field length can be entered.

Reference

If the **Reference** type is selected, a popup will appear that allows the selection of the desired dataset to reference. Click on a dataset name. Once a dataset has been selected, a popup will appear containing the fields in that dataset. Click on the field name to reference. When a user selects a Reference type field, a popup will appear, allowing data selection from the contents of the referenced field in the other dataset.

Reference Defaults

To set a default for a reference field, control click in the type column. This will open the field for editing without producing the data type popup menu. Add an exclamation point after the reference field definition and then enter a reference link to a default value.

R:Organization.Code!Employee.Org Code

Virtual

If the **Virtual** type is selected, a popup will appear that contains all the fields in the current dataset. Click on each field until all the desired items have been chosen. The contents of the new field will be automatically created from all of the fields selected. To override the popup and add text to the virtual field definition, hold down the **Ctrl** key and click in the field definition. A cursor will appear allowing the field to be modified.

Virtual Reference

A virtual reference field is a field that is automatically populated by a reference link to another dataset. For example, each employee has an Org Code. If the Org Code is defined as a reference field to a Code field in the Organization dataset, the Employee's Org Code will establish a link to a particular Organization record. Other fields in that record can be linked as a Virtual Reference field, such as a Manager.

To define a Virtual reference field, enter a new field name. Chose Virtual as the data type, and then select the field that contains the reference link to another dataset. A popup will then appear that contains all the fields from the linked dataset. Choose a field from the list to populate the virtual reference field.

Pick

If the **Pick** type is selected, a dialog will be provided so that you can enter all the possible choices for the field. The pick list items can be separated by a comma or a space. Items with embedded spaces must be enclosed in quotes. This type provides a method for data validation. **Ctrl**-*click* will override the popup and allow direct editing, but the entry still must match one of the pick list items.

Lookup

If the **Lookup** type is selected, you must specify the name of a lookup table. As the lookup table contents change by date range, the resulting data will change as well.

Calculate

If the **Calculate** type is selected, a popup will appear containing a list of all the defined fields. Once a field has been selected, a second popup will allow selection of an operator. Once an operator has been selected, the field list will reappear to allow a second field selection. The last popup will contain the fields from the selected dataset.

Overriding Data Type Popups

To override the function popup and build a more complex calculated formula, hold the **Ctrl** key and *click* in the type column to open the field definition for editing. The formula must be preceded with **C:** to indicate a calculated field type. Make sure that any field you use in a calculated formula has been previously defined in the dataset.

The following operators can be selected:

	Sample	Description
+	x + y	add x to y
-	x - y	subtract y from x
*	x * y	multiply x by y
/	x / y	divide x by y
%	x % y	find percent x is of y
#	x # y	find percent that x is of (x + y)

To modify the format specifier, hold down the **Ctrl** key and click on the current type. A cursor will appear allowing the format specifier to be edited. Add substring specifiers to virtual fields by adding the start column and stop column after the field name. The columns must be enclosed in square brackets and separated by a colon (e.g., **name[3:6]**). Also edit in text constants by enclosing the text string in quotes and using the plus sign to append the string with the field components (e.g., **last + ", " + first**).

Group Operations

If the **Group Operation** type is selected, a function popup will appear. Select the Min, Max, Sum or Count function from the popup. Then select a numeric dataset from the popup list. The last popup will contain the fields from the selected dataset.

Drilldown, Child and Parent Types

The **Drilldown**, **Child** and **Parent** types are used for defining hierarchy amoung tables, where approved projects, phases, and other breakdown levels can be stored. Users can then use a pre-defined drilldown mechanism to select unplanned tasks by choosing each WBS level in series, down to the work package. This process is covered in detail in the section on Work Breakdown Structures.

Calendar

The **Calendar** data type should be used for a calendar name that contains a Julian working calendar name.

Future Data Types

Access, **Progress** and **Filter** types are not yet incorporated in the current version, but will be implemented in the future. The Access and Filter data types will be used to automatically produce a popup of the existing Access levels and Filter names, respectively. The Progress data type will be used to enforce percentage boundaries of 0% through 100%.

Attributes

The Attribute keywords for the Activity dataset are:

TaskID	This field contains the unique activity identifier.
TaskPick	The contents of this field will be used for the task popup in Plan mode and Time entry mode.
TaskStart	This field must contain a valid task start date, and is used to determine the overall work span of the task.
TaskComp	This field must contain a valid task complete date, and is used to determine the overall work span of the task.
TaskLevel	This field must contain a percentage level-of-effort, and is used to determine the overall work span of the task.
TaskType	This is used to specify project and non-project tasks; non-project tasks have a type that begins with the letter **N.**
TaskColor	The color and pattern numbers in this field are used to determine the color and pattern of the activity bar on task lists.
TaskFile	This field can hold a filename which receives the actual hours used on the task when a Dump is executed.
TaskResFilter	This skill filter specifies the skill required by the task, so that in Plan mode, only those resources with a matching skill are displayed.
TaskPC	The percent complete field used by the AMS REALTIME Projects interface to correspond to the schedule Progress field.
ActID	The field used by the AMS REALTIME Projects interface to link to the schedule Activity ID (if not found, the field with TaskID is used).
TaskDrilldown	This is the starting field that will be used for a defined drilldown order for unplanned work selection.
TaskCal	The field used to hold the activity's working calendar.
TaskCloseon	XXXX
TaskMSPXID	Microsoft Project Task Unique ID
TaskProject	The Project to which the task belongs.
TaskDescription	For the field that contains the task's description.

Note: To remove an attribute from a definition, click on the attribute column and select the attribute again to remove it.

A Sample Activity Dataset Definition

The following is a sample of an Activity Dataset definition. Field names are followed by field types and formats. Key fields have an Attribute key specified.

Defining the Employee Dataset

The basic employee fields required by the product are predefined in the Employee dataset. While these names can be modified, *extreme* care must be taken to change all other related field references across the datasets if changes are made at all. The contents of the Attributes field (by specific keyword) determines how AMS REALTIME Resources differentiates between special purpose fields and fields which contain other information.

The Attribute keywords for the Employee dataset are:

ResID	The contents of this field will be displayed in a popup when selecting the Organization in Plan mode.
ResOrg	The contents of this field will specify the organization to which each employee belongs.
ResPick	The contents of this field will populate the resource popup (a list of employees).
ResLogin	This field contains the Login ID for each employee.
ResLabel	This field is used to label each employee's task list (the schedule bars).
ResProxy	This field is used to identify an alternate employee login that can access a AMS REALTIME Resources account without knowing the password.
ResPassword	This identifies the Login password field.
ResAccess	This identifies the Access Level field.
ResType	This field is used to identify specific vs. generic resources.
ResDrilldown	This identifies a field which holds the name of a Resource drilldown filter.
ResCal	This identifies a field that contains the name of the Resource Calendar.
ResMSPXID	Microsoft Project Resource Unique identifier.

To add new fields to the Employee dataset, *click* in the first empty line under the **Name** column. Type the new field name.

Click on the same line under the **Type** column. A popup will appear containing all the data types. *Click* on the appropriate data type. If the **Alpha** type is selected, a prompt will appear so that the

maximum field length can be entered. If **Reference, Virtual, Calculate, Pick** or other types are selected, follow the same procedures described in the section above on ***Defining the Activity Dataset***.

Defining the Organization Dataset

The basic organization fields which are required by the product are predefined in the Organization dataset. While these names can be modified, *extreme* care must be taken to change all other related field references across the datasets if changes are made at all. The contents of the Attributes field (by specific keyword) is how the product differentiates between fields which are used for a special purpose and fields which contain information which is a user reference only.

The Attribute keywords for the Organization dataset are:

DeptPick	The contents of this field will be displayed in a popup when selecting the Organization in Plan mode.
DeptOrg	The contents of this field will be used for each employee's OrgCode, which can be used to create an organizational hierarchy.
DeptID	Department Indentifier
DeptCal	Department Calendar.

To add new fields to the Organization dataset, *click* in the first empty line under the **Name** column. Type the new field name.

Click on the same line under the **Type** column. A popup will appear containing all the data types. *Click* on the appropriate data type. If the **Alpha** type is selected, a prompt will appear so that the maximum field length can be entered. If **Reference, Virtual, Calculate, Pick** or other types are selected, follow the same procedures described in the section above on ***Defining the Activity Dataset***.

Renaming, Creating and Deleting Datasets

You can create new datasets, delete old user-defined datasets, or rename an existing dataset using the Rename, Create, and Delete buttons that are located underneath the dataset names along the left side of the screen.

Datasets must be empty before they can be deleted. This is a safety precaution. If a deleted user-defined dataset will be replaced by a new dataset, exit and restart the program before creating the new dataset.

There are two types of datasets: **Text** and **Numeric**. Text datasets are standard, and should be selected for most types of data storage and retrieval. The Activity, Employee and Organization datasets are

Text. Numeric datasets are time-phased and have one or more reference links back to a key field in other datasets which make the record unique. Numeric datasets are limited to reference, date, pick, calculated and numeric data types. The Actuals and Workplan datasets are Numeric. Other examples of a Numeric dataset would be a Lookup table for time-phased rates or organizations, or a dataset that stores statistical information.

Note: If a dataset or field name is redefined or renamed, it is important to ensure that all other virtual fields and reference fields that access the new field are also updated.

Timecard Notes and Annotations

You can create a dataset that can be used to store information about a particular timecard entry through a link. First, create a new text database. The name will appear in a button in Time mode, so it may be desirable to use a short descriptive field name, such as **Notes**. Then create a field in the new database to hold text information. More than one field can be created to hold information that is annotated to the actual time entry.

The Actuals dataset has a **Reserved** field for the link information. Change the Type of the Reserved field to **Extension**. Then choose the new database you have just created from the popup. The Reserved field should now be defined as **X:Notes[6]** (six being the slot used).

In the Time mode, a button will appear next to the New Activity button that contains Notes (or the name of the text annotations database). When a time cell for a specific date is selected, clicking on the Notes button will provide a dialog that allows an employee to add in information annotations to the selected date.

This data can also be viewed in the Actuals database, where all linked fields will be displayed with the time entry record. To see only those fields which have a Note annotation, create a filter in the Actuals Filter table where the Reserved field[6] is not equal to a blank (e.g., enter <> under the field defined as the Extension field).

Lookup Fields

Lookup fields are used for information that changes over time. For example, an employee's organization may change if he transfers from one department to another. If the employee's organization code is a text or reference field and the organization is simply changed, the history of the previous organization's actuals will be lost.

However, if a lookup table is created to specify an employee's organization based on an "as of" date, actuals that were posted under the old organization will still belong to the previous organization, and the actuals after the "as of" date will be assigned to the new organization.

Lookup tables can be used for rates that change over time, organization codes, or any other information that varies with time.

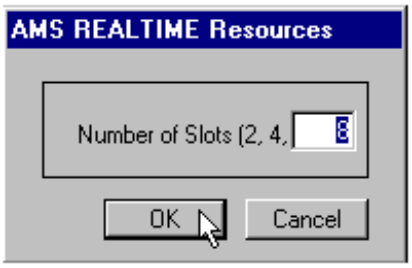
Creating a Lookup Dataset

In the sample provided below, we will create an Organization lookup table. The first step is to create a numeric dataset. It will have one Key Field which will reference the a unique employee identifier, ResID.

Use the Create New Dataset button to add a new dataset. We will call it **OrgLookup**. Choose the **Numeric** dataset type.

At the **Number of Slots** prompt, enter 8. This will provide the room to define up to 8 slots, which are references to other records or independent fields, in the Lookup database. While we will only start by defining 3 fields, this will provide room for the database definition to be expanded.

Note that if the fields are unique references, the slot numbers do not have to be specifically entered. The first field uses slot 0, the next field uses slot 1, and so on. However, if another field is defined where the slot reference will be shared, that slot must be specifically entered. Hold down the **Ctrl** key and *click* in the **Type** field to override the popup and append the slot number to the field (e.g., the fields R:Employee.ResID[0] and R:Employee.Rate[0] share a reference to an employee record).

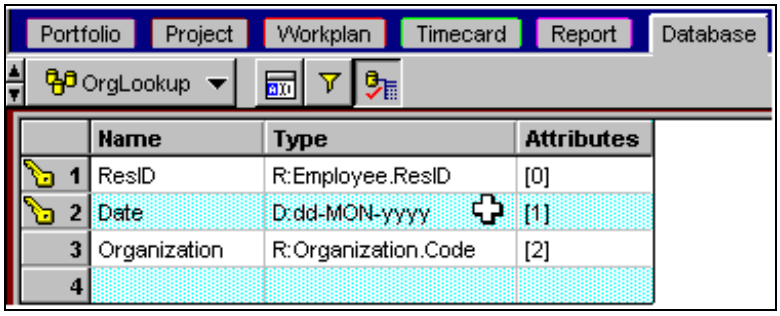


Specifying the Number of Field Slots

The next step is to define the **OrgLookup** fields. Enter **ResID** on the first line under Name. Choose **Reference** as the data type. Select the **Employee** dataset, and the **ResID** field. This first field is the Key Field which will be used to identify the Lookup record.

Add **Date** as the second field name (Date is a fixed field name that the software uses, and can not be altered). Set it to the **Date** data type (use any preferred format with month, day and year, and then **Start of Shift**). The Date field is defined to hold the date the change should take effect. AMS REALTIME Resources will compare the system date with the "change as of" date.

Add **Organization** as the third field name. This name should match with the name of the Organization reference in the Actuals table. Set it to a **Reference** type, selecting the **Organization** dataset and the **Code** field.



OrgLookup Database Definition

Important Notes on Lookup Tables: Lookup table entries must be maintained in ascending date order. The dates are "as of" dates, meaning that each key field match will use the contents of the lookup fields with the latest date. Each field that uses a lookup table to populate a field should have at least one entry in the lookup table.

Entering Lookup Reference Data

If you do not already have employee and Organization data in those tables, enter some test data to work with. At a minimum, you will need to populate the **Employee** dataset with a few entries that have **ResID** (a unique identifier), **Name** and **Login** defined. The **Organization** dataset should have at least two unique Organization Code and Title entries.

Now change back to the **OrgLookup** dataset in Update mode. Under the **ResID**, select each ResID from the popup, one per line. Under the **Date** field, enter the *beginning of this year*. Under each code, select an appropriate Organization.

Now choose one of the employees that already has an entry and add a second entry for that **ResID**. Enter tomorrow's date under the **Date** field, and then set the **Organization** field to a new organization. This will allow actual entries from tomorrow forward to automatically use the employee's new organization Code.

Defining Fields that Use a Lookup Field

Now that we have the OrgLookup table defined and populated with data, we can create fields in the Actuals dataset and the Employee dataset that use the Lookup table to determine their value.

Change back to **Define** mode and select the **Actuals** dataset. Change the **Organization data type** to **Lookup**. A popup will appear that contains all Numeric datasets; choose the **OrgLookup** table from the popup. AMS REALTIME Resources will determine that correct value for the Actuals Organization field by finding the latest date reference in the OrgLookup Organization field that contains the ResID (the key field). Lookup data values are populated in a Numeric table based on a matching field name.

Now select the **Employee** dataset. Change the Type of the **Org Code** field to **Lookup**. Choose the **OrgLookup** table from the popup of numeric datasets. Now choose **Organization** from the field list. This is a lookup reference from a text dataset. This field value will

be changed automatically when the system date passes the “as of” **Date** in the OrgLookup table.

	Name	Type	Attributes
1	ResID	A15	ResID
2	Org Code	L:OrgLookup.Organization	ResOrg
3	Name	A30	ResPick, ResLabel
4	Login	A9	ResLogin
5	Access Level	P:SYSADM TIMECARD	ResAccess
6	Password	A8	ResPassword
7	Type	P:Person Generic	ResType
8	Skill	A20	
9	ECode	R:Rates.RCode	
10	ERate	V:ECode.ERate	
11			

A Lookup Field in the Employee Dataset

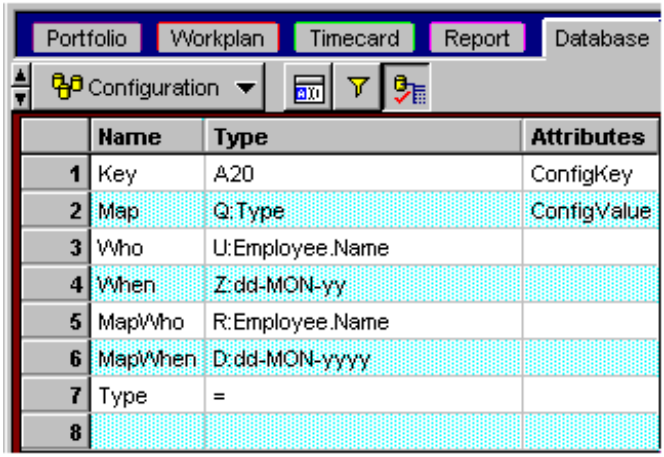
Configuration Dataset

Configuration Settings in the Database

Configuration settings are stored in the Configuration dataset. This is a special table designed to allow the system administrator to store certain switches in the Enterprise database. This ensures that every client that logs in to the system gets the same settings and program behavior.

At release 5.2.0-1354, the only two fields that have been migrated to the configuration table are used to define the location of the .map files needed to do a commit and status action from within Microsoft Project. However the following gives a brief outline as to the tables future function.

Currently the AMS REALTIME Suite of software ship with a configuration file that is read whenever the program is opened. Typically this configuration file (rtp32.ini, rtr32.ini or rtrs32.ini) is installed in the programs executable directory. It contains a number of setting that determine the program's operation. With a client server application it makes sense to centralize the settings into a database table, with the ability to specify global (affects all who login) settings, and individual settings that only affect a specific person. This may be necessary if users are logging in from different platforms.



	Name	Type	Attributes
1	Key	A20	ConfigKey
2	Map	Q:Type	ConfigValue
3	Who	U:Employee.Name	
4	When	Z:dd-MON-yy	
5	MapWho	R:Employee.Name	
6	MapWhen	D:dd-MON-yyyy	
7	Type	=	
8			

User Attributes

Adding Fields to the GUI

User defined fields can be added to certain planes in the Resources user interface. This capability allows the system administrator to present additional fields to the user community, without the user needing to go into the database tab to enter data in customised field types.

This is achieved through the use of attributes that are selected in the Attributes field of the Activity and Employee datasets.

Activity Dataset User Attributes

The user fields in this dataset can be applied when the dataset is opened in define mode.

Click on the attribute field on the row of the field that is to be defined as a User field. The following list can be seen:

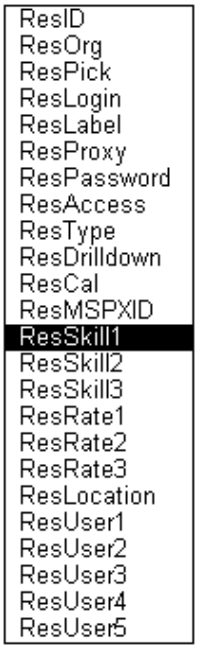
TaskUser1 - TaskUser10 will add the field to the tasl list pane in the lower half of the screen.

Employee Dataset user Attributes

Resource fields can be added to the availability listing using the ResSkill, ResRate and ResUser attributes. These can be set in the Employee dataset in define mode.

This feature is useful in providing additional information about a resource to a team leader or resource manager. For example it may be useful to have a complete listing of the resources' specialized skills when making resource assignments. Therefor a skill field can be created in the Employee table and the ResSkill1 attribute added to that field. Whenever the availability table is being viewed, the content of the skill field can be seen, along side the standard information.

Click on the Attribute column in the Employee dataset to view the following list:



The names of these user fields; ResSkill1 - 3, ResRate1 - 3 and ResUser1 - 5, are simply guides as to their usage. In reality you can use these attributes to display anything you like, except against fields that are already displayed on the table.

Updating Information

Data Entry Tables

Data can be entered or edited by selecting the appropriate dataset and choosing **Update** mode. All records are maintained in order based on the key identifier field in the dataset, which must be unique.

Fields which are not displayed can be added by clicking the mouse in the background space to the right of the data table and selecting from the field name popup. Only those fields not already displayed are included in the popup list. Each selected field is added to the end of the table.

Changing the Table Layout

If a View has been saved in the current dataset, table fields can be moved or resized. Use View Save As... to name a View. To move a table field column, position the cursor at the top of the field heading. When the cursor changes to an open palm, click and drag the column to its new position and let go of the mouse.

To size the columns, position the cursor at the right edge of the field heading. When the cursor changes to a pointing finger, click and drag until the column is the desired size. If the column is sized all the way down to its opposite edge, (zero width) the column will disappear. Selecting **AutoResize** from the View menu will automatically size each column to the size allowed by the field definition.

Deleting Records

Records may be deleted by selecting the row or rows (click or **Shift**-click on the row line number) and selecting Delete from the Edit menu. The Del key on the keyboard can also be used.

Saving the Data

When the entering or editing of information is completed in the selected dataset and it is a local database, select Save from the File menu. If the server version is being used, the server will automatically save the record.

Hierarchical Organization Data Coding

If the OrgCode field in the Employee dataset has a hierarchical structure, the positional values of the field will be used to establish "organizational ownership" of employees. The contents of this field are viewed in a hierarchical way to determine which employee data a user can view and which employees are available for Login or Plan access.

The coding works like a fixed length OBS (Organizational Breakdown Structure) code, which has no separating decimals and is padded to the right with zeros when a higher organizational level applies. The zeros are treated as wildcard digits, so that an employee that had zeros in the last two digits of his OrgCode number could access other employee records provided that the remaining OrgCode digits matched.

For example, an employee with an OrgCode of 373000 could plan work for employees with the OrgCode of 373450, 373457, and 373680, but *not* have access to employee with OrgCodes of 380000 or 374123.

Expenses

Introduction

Expenses incurred during the execution of a project task can be recorded along with the timesheet. These expenses can be virtually anything that represents an additional cost to the project or task. They can also be used to record personal expenses that require reimbursement to an individual. In either case the expenses feature allows a table detailing expenses to be populated in an area just below the time card. As is the case with most AMS REALTIME features, expenses can be customized and maintained during the like of the project to reflect business requirements and functional capability.

Entering Expenses

Once actual hours have been booked to an activity, expenses can be recorded against the entry. Expense entries are linked to individual timecard cells.

To enter an expense against a time entry, select the timecard cell against which the expenses are to be recorded and then click on the **Expenses** button located in the top right hand corner of the timecard tab window.

The expenses table will appear below the timecard table.

1. Click on the timecard to select the cell to which an expense is to be applied.
2. In the **Expenses** table, click on the first blank cell in the **Category** column. A list of expense categories will appear.
3. Click on the desired category to activate the row. The name of the activity cell selected in the timecard will appear, along with the day in the date column.
4. Enter the expense amount in the **Amount** column.

	Task	Date	Category	Amount
0	DIRECT ACCESS PORTS	Wed	Meals	$9.50
1	DIRECT ACCESS PORTS	Wed	Material	$143.00

To add further expenses to the activity, click in the next blank **Category** column an choose another category. Then enter a new amount for the category as described above.

To save the entries for both time and expense, click the **Save** button on the program's toolbar.

Once a timecard cell has an expence associated with it, a small green box appears in the lower right hand corner of the cell.

Tu 19	We 20	Th 21	Fr 22
8.00	6.00		

Expense Amounts

The expenses amount column can be configured to display any currency symbol or unit type. For example, the figure entered can represent a currency amount or a quantity for mileage or hours.

Different currency symbols can be entered using the ASCII code values. This is useful if the keyboard being used does not have a key for the symbol required. The examples below give some common currency symbols and their ASCII code sequence for entering in the amount field. These are correct for Windows only.

Alt + 0163 = £
Alt + 0036 = $
Alt + 0128 = €
Alt + 0165 = ¥

To enter a symbol that is not available on the keyboard, hold down the Alt key and use the number pad of the keyboard to type in the ASCII code number. Release the Alt key and the symbol will appear in the cell. The currency amount can now be entered.

This will only work using the number key pad, usually to the right of the 'QWERTY' alpha numeric keyboard. Numbers above the Alpha keys do not normally work for entering ASCII code because they have shared function such as 1 (Shift for !), 2 (Shift for @) etc.

The first currency listed in the **Units** field pick list will always be the default that prefixes the amount number.

Mileage and Hours

If the amount being entered represents units other than currency, the description is typed after the amount. The standard amount types apart from curreny symbols are mileage and hours. For example, if 200 miles need to be recorded, the amount is typed in followed by the word Miles.

	Task	Date	Category	Amount
0	PROJECT SPECIFICATION	Wed	Travel	200.00 Miles
1	PROJECT SPECIFICATION	Wed	Lodging	$109.43

Adding notes to the Expenses table

Database Administrative information. The following requires full system administrator access rights to the database.

A notes extension table can be added to the expenses table allowing users to enter brief notes to the expense table in timecard. To add a notes extension, click on the Define tab.

First a dataset must be created to store the notes made against an expense entry. The Expenses table will then link to this dataset allowing it's fields to be available as columns in the expenses table.

1. Click on the **Create New Dataset** button.
2. In the resulting dialog box, enter a name for the dataset. For example 'Expense Notes'.
3. In the **New Dataset Type** dialog, click on the **Text** button to create a text type dataset. The new dataset name will appear in the dataset dropdown list to the left of the **Define** Tab.
4. To open the new dataset click on the dataset dropdown and select it from the menu..
5. In the **Name** column, enter the name for the first notes field, for example 'Comments'.
6. In the type column, click on the first blank cell to see a list of valid data types. Choose the **Alpha** option.
7. In the **Number of Characters** dialog, enter the maximum number of characters that can be typed into the field (Maximum allowed 511); then click OK.

To enter further fields in the Expense Notes table, repeat the above operation. Once finished, click the Save button on the toolbar to save the changes.

Once the **Expense Notes** fields have been entered the table can be linked to the Expenses table as an extension. To do this follow these next steps.

1. Click on the **Define** tab.
2. Click on the **Expenses** table diamond on the far left of the define tab.
3. In the **Expense** table look for the standard field called 'Extension' and click on the **Type** field next to it.
4. From the resulting popup list, click on the **Extension** option.
5. In the next resulting popup list, choose the **Expense Notes** dataset option.
6. Click on the **Save** button on the toolbar to save the changes.

The Expenses table is now linked to the Expense Notes dataset. The fields created in the Expense Notes table will now be available to the user in the Expense table below the timecard.

Storing Files in the Database (BLOB)

Files produced by programs such as AMS REALTIME Projects, Microsoft Word, Excel and Projects can be stored within fields in the AMS Enterprise server. In fact any type of binary, ASCII or text file can be stored. This is referred to as Binary Large Object (BLOB) storage.

	Project	Description	FileStore
1	Repository Project	Define and set up a projec	30000act.arp
2	ABC Lumber	Create an automated inver	
3	Overhead	Internal company overhea	
4	Training	Internal training courses re	
5	bsample	Internal programming proje	
6	DATACONV	Data conversion project fc	
7			

For example, a field can be added to the Projects table to store schedule files generated by AMS REALTIME Projects or Microsoft Project. These project files contain the schedule for the project in the description. This is a convenient way to securely store program files in a logical place, where they can be easily associated with the data in the database. Another example might be to store Word documents for a project brief.

Storing a File

To associate and store files in the Resource's enterprise database, follow these steps.

1. Click on the **Database** tab and from the dataset dropdown, choose the dataset to modify.
2. Click on the define button.
3. Create a new field by typing its name in the first blank cell in the **Name** column.
4. Click in the type field and select **Binary Large Object** from the popup list.
5. In the resulting dialog, enter the file extension that the field will store. For example, if AMS REALTIME Projects' files are to be stored, enter *.arp, then click the **OK** button.

This table is now ready to store Binary Large Objects. To store a file in the new field, follow these next steps.

1. Click on the **Database** tab and from the database popdown, choose the dataset that has been modified to stored Blobs.
2. If the newly created field is not visible, click on any blank part of the background to invoke the selection list. The newly created field should be at the bottom of that list. Click on the field name in the list to open it into the table.
3. Click on the newly created field and from the popup menu, choose **Store**.
4. In the resulting file open dialog, navigate to the location of the desired file and click **OK** to select the file.
5. The file name will now appear in the field. The Binary Large Object has now been stored in the database.

To open the stored file, click on the file's name in the database field and from the resulting dialog box choose the **Open** option. The program that owns the file will open and display the file.

Check Out and Check In

In order to protect the data integrity of stored files, the **Check out** and **Check in** features can be used to stop undesirable changes being made to the file.

Once a specific user checks out a file, no other person can open or change the file. This protects the file from accidental or intentional alteration. Only the user who checks out a file, can check it back in. Once the file has been checked back in, it is available for others with access to that table.

HOWTO: Set up for check out/in

For check out and check in to work correctly two additional fields must be created in the same dataset as the blob definition. These are the who and when fields, and the blob definition to populate them.

The Who and When fields must be named in the following way:

*BlobFieldName*Who & *BlobFieldName*When, where *BlobFieldName* is the name of the field containing the blob.

Example: a blob field has been created to store .arp schedule files. The field is named ARP. Therefor, the Who and When fields must be named:

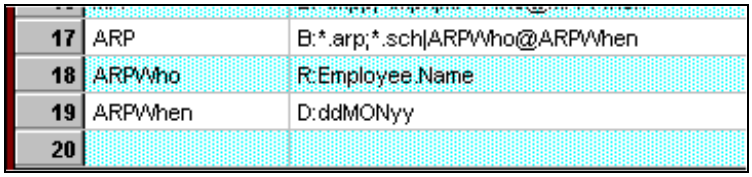
ARPWho and ARPWhen

Now a special statement needs to be added to the blob field type definition, so that these two fields get populated.

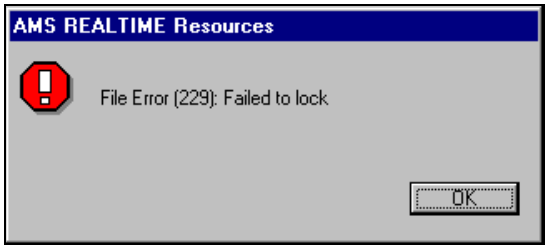
B:*.arp;*.sch|**ARPWho@ARPWhen**

The item in bold has been added to the blob field definition. Below is a sample from a working check out/in setup.

Tip: To edit the type field, hold down the Ctrl key and click in the field. Holding down the Ctrl key prevents the standard popup list from appearing when clicking in the field.



Check in/out Errors: File Error(229): Failed to lock



If you see this message when attempting a file check out or check in, there is something wrong with the check in/out setup. Either the Who and When fields have been set up with the wrong names, or the blob field definition needs to be verified. Or one or all of these setup items has been missed.

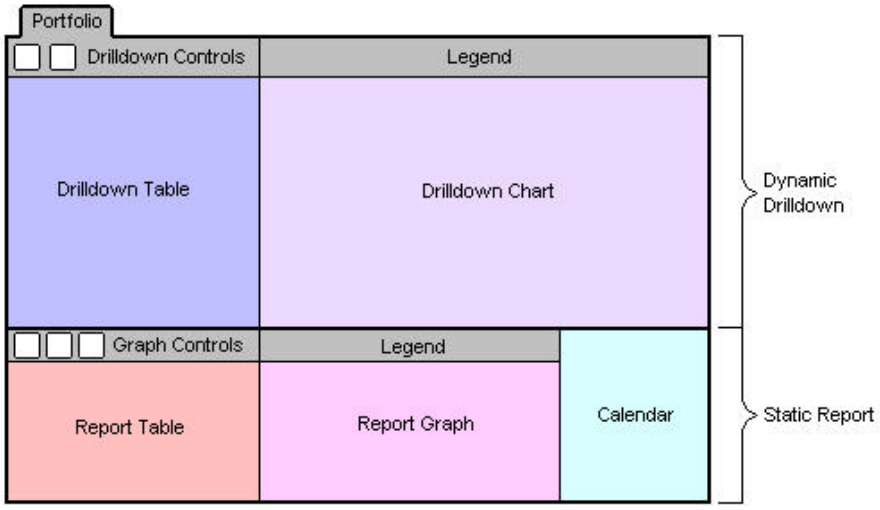
Portfolio Tab

What is Portfolio?

Overview

Portfolio view is a live executive project overview that displays the status of all projects contained in the enterprise server. It offers the ability to view at the highest level to see the overall status of a project, and also allows the viewer to drill down into the detail of the project and examine progress, WBS, OBS and resource usage across the organization's entire project portfolio.

The following diagram shows the basic layout of the Portfolio tab and is followed by a description of each item and its capabilities. The first point to note, as with other views in this product, is the horizontal split between the dynamic selection area and charts in the top half, and the static display parts in the lower half of the screen. The component in the top half allow the views and charts to be changed interactively on the fly using the mouse. The lower half simply follows the selections and controls of the upper half and displays whatever is selected, without the capability to change the selected data.



Drilldown Controls

This area allows the project portfolio data to be selected. This is done by drilling down through the different layers of data via a pop-down list. When the view is first opened, the Set Drilldown Order tool is present in the Drilldown Controls area of the screen.

Set Drilldown Order tool.

The hierarchy that can be navigated through is largely dependant on how the database has been configured. Typically there would be a hierarchy that starts with the project, down to activities, then down to resources. This can be displayed and organized in any order desired based on selections from the pop-down list.

Project tool.

The project tool appears when a project is selected from the pop-down list. Clicking on this tool presents a list of fields that are available in the Project table. The display in the drilldown table area will show the field selected here.

Organization tool.

The Organization tool allow the Portfolio view to be filtered by organizational codes. These code are present in the organization table. Clicking on this button displays a menu of the fields available in the organization table.

Activity tool.

The activity tool appears when activities are selected using the pop-down list. Clicking on this tool presents a list of fields that are available in the activity table. The display in the drilldown table area will show the field selected here.

Resource tool.

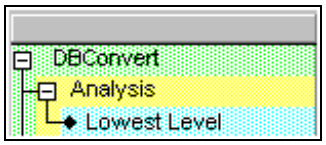
The resource tool appears when resource are selected using the pop-down list. Clicking on this tool presents a list of fields that are available in the employee table. The display in the drilldown table area will show the field selected here.

Top Legend Area

The display here depends on the chart type that is selected. This area displays either a project Gantt chart or a hierarchical work breakdown structure. If a Gantt chart is selected, the legend displays a time scale. If the work breakdown structure is selected, a toolbar for the WBS chart appears.

Drilldown Table

The Drilldown Table displays the fields that have been selected during a drilldown operation. When first selected these items show a list of the top level items chosen in the pop-down list. Each of these items has a little plus sign next to it, indicating that there are items below it that can be viewed by clicking on the plus sign. This is how the drilldown is navigated. The drilldown depth depends on the number of items chosen from the pop-down menus. The lowest level item has been reached when the is no plus sign next to the item and a diamond appears on the item line.



In this above example, DBConvert is the project level, Analysis is the Activity level and the lowest level in this particular drilldown sequence is a resource. Resource names not shown here to protect the innocent.

Selecting Items

Items can be selected in the list by clicking on the text of the item. The selection feature is hierarchy sensitive. That is to say, that clicking on a parent item selects both the parent and any child element below.

Drilldown Chart

The content of this area depends on the chart selection made with the Drilldown control tools. By default a Gantt chart is displayed in this area. It can also display a Work Breakdown Structure by clicking the 'Select Chart Type' tool.

Select Chart Type tool.

Graph Controls

The lower half of the Portfolio screen contains a set of graph controls that can be used to alter the display in the report graph and report table area.

Using Portfolio View

Performing a Drilldown

When entering the Portfolio View, the first operation to perform is a drilldown. A drilldown allows the data to be viewed in any chosen sort order. For example, the data may need to be viewed first by project, then by activity and finally by resource.

Project -
|
--- Activity ---
|
--- Resource

To select the order use the 'Set Drilldown Order' tool.

Set Drilldown Order tool.

Click on the Set Drilldown Order button and choose Projects from the list. The list will change to a list of fields in the projects table. The field selected here will be the field displayed in the Portfolio table.

Repeat the operation for the Activity and finally the Resource selection. Once all the necessary items have been selected, click away from the list to close it and enter the selection in the portfolio view.

Return to Set Drilldown Order list at any time to change the order that is being viewed. Once the desired view has been selected, further modifications to the view can be made using the dataset filter buttons.

Click on the desired button to change the displayed fields from each of the datasets. For example, to change the resource view from displaying ResID to Name, click the resource button and choose Name from the fields list.

Portfolio Table

When a drilldown selection is complete, the Portfolio table is activated. The fist column of this table is permanently locked to the left of the screen. This mean that as the table is scrolled using the mouse and the horizontal slider below the table, the other field columns slide underneath the first locked column. The table contains the following fields displaying different elements of the project data. These fields are explained below.

Total actuals - Total actuals to date for the selected item(s).

Baseline - Original Baseline hours for the selected item(s).

ETC (Estimate to Complete) - Estimated remaining hours to completion of the task.

Staff Days - Number of total staff days worked.

Start - Start date.

Complete - Complete Date.

First Charge - Date of the first actual recorded for the item.

Last Charge - Date of last actual recorded hours.

Status - Task status; open or closed/completed.

Period Plan - Planned hours for the selected period.

Period Actuals - Actual hours for the selected period.

% Complete - Percentage of work completed on the activity.

% Remaining - Percentage of remaining work on the activity.

LOE (etc) - Level of effort required to complete.

LOE (to date) - Average level of effort so far.

Variance - Total amount of original planned hours, minus work so far (ACWP) plus the estimate to complete, i.e. planned - total + etc.

Remaining - How much work is left to complete in hours.

By default the table displays with a width of about 20% of the screen. Therefore most of these table columns are hidden behind the Gantt chart to the right of the table. To expand the table to view more of the columns, place the mouse pointer on the edge of the Gantt table until the cursor changes to a left/right arrow.

Click and drag the edge of the Gantt chart to the right to expose the table cells hidden underneath.

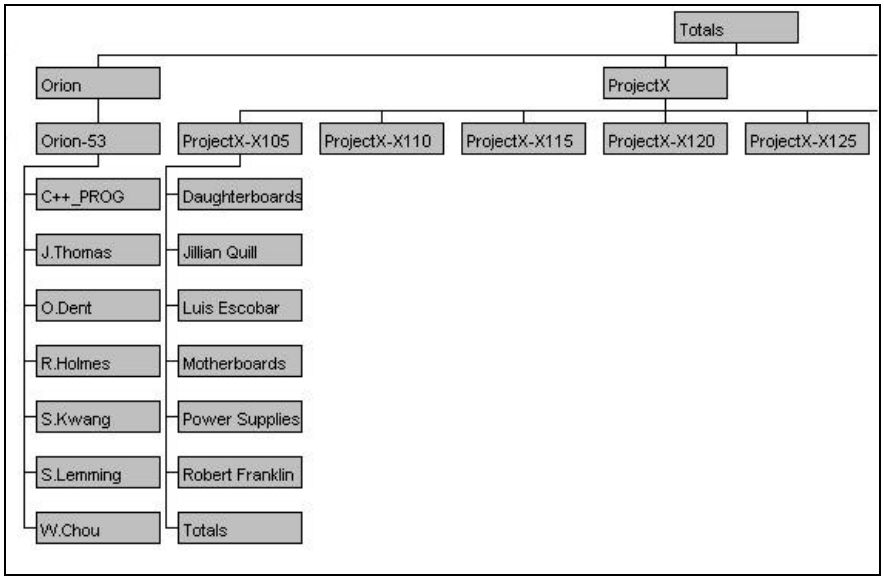
Structure Diagram Chart

By default the Portfolio View displays the standard Gantt chart in the portfolio chart area. This can be toggled with an alternative structure diagram by clicking on the Select Chart Type button.

The structure diagram chart is linked to the drilldown selection in the first column of the Portfolio Table. Changing the level of drilldown in the structure table alters the layout of the structure diagram.

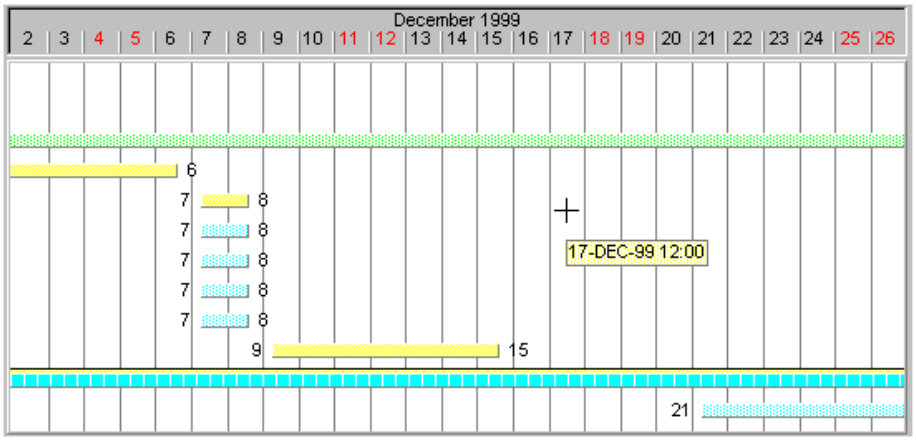
To view the lowest leaf of a structure's branch, either click on the + key next to the item in the list or click on the structure diagram node itself to open the next level.

The structure will toggle between a horizontal or vertical layout, depending on the toggle status.



Gantt Chart

The Gantt chart mode of Portfolio is the default view. The chart displays the activity bars for the selected drilldown.



Drilling down into specific projects will open the chart to display the required details in the Gantt chart. Further details can be revealed buy opening up the timeframe to zoom in on a specific dates.

Projects, activities and resource can be selected by clicking the mouse on objects available in the Gantt display area. Multiple selections can be made by clicking and dragging the mouse pointer over a number of activity bars.

Unlike other Gantt charts throughout the AMS REALTIME suite of products, the Portfolio chart will display multiple activity bars for a single activity if the drilldown selection requires. For example, if the drilldown selection is Project, Activity and Resource, then each resource assigned to the task will have a representative bar for it's own commitment at the lowest level.

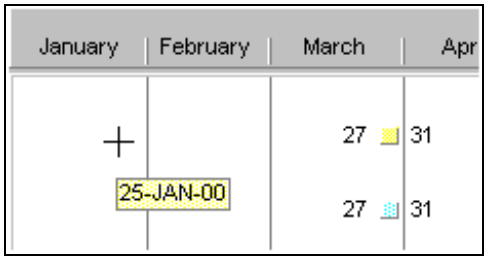
Baseline

If an activity displayed has moved from it's original baseline dates, a representation of the original baseline dates can be seen behind the activity bar on the screen. It appears as a shadow behind the activity bar.

In Portfolio view only the project activity bars will display the baseline marker. Resource and organization bars will not show a baseline.

Clues

To help the user keep track of their position on the Gantt chart, a permanent tool tip box is displayed near the mouse pointer. This gives a continually updated report on the date at which the mouse pointer rests.



Placing the mouse pointer over an activity changes the tool tip flag to the start and complete dates for the activity. This is useful if one or both ends of the activity bar are currently off the screen.

Auto Range

Auto Range is a function that monitors and updates the time scale or level of zoom depending on the width of activity bars present in the Gantt chart. As the view is altered, the screen adjust the time scale in order to keep all of the activity bars inside the visible area. As selections change, the Auto Range updates the screen to show the entire activity bar lengths at all times.

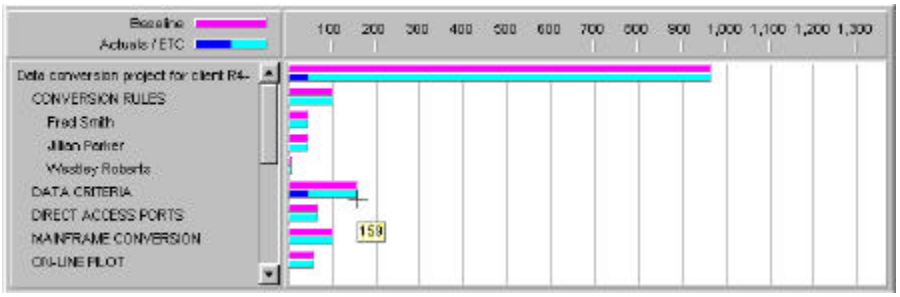
This function is selectable manually using the Auto Range toggle button at the top of the Portfolio tab. The function automatically disables as soon as any manual adjustment is made to the time scale.

Auto Range tool.

The Auto Range tool is a toggle button. Each click alternate it's state from enabled (appears depressed) to disabled (appears up).

Report Displays

The lower potion of the Portfolio screen offers an area for reports. Again these reports are dependant on the contents of the current selection in the portfolio drilldown table. The report updates automatically when changes are made to the list selection.



The report shows the current baseline hours, actual hours and estimate to complete for the selected items. In the picture above, the top bar shows the original planned hours for the entire project. The upper portion of that bar represents baseline, the lower left portion represents actual hours booked by the resources and the right hand portion of the bar (light blue) indicates the estimated hours to complete the task.

The mouse cursor can be placed on the end of a bar and its tool tip flag gives a precise number of hours.

Workplan Tab

Introduction

What is Workplan?

The Workplan tab allows the creation and modification of work assignments across an entire project portfolio. Therefore, resources that are shared among activities or projects can have their assignments created or modified. The Workplan tab or View, accessed by selecting the workplan tab, displays the activity data in hierarchical order based on selections made from pick-list buttons at the top of the view. First the project is selected, next an activity filter can be used to show only activities that meet certain criteria, finally the activities themselves can be selected.

The resource window in the center of the lower portion of the screen shows resource names and the availability of the resource over time. This allows the viewer to see critical project requirements, resource assignments and availability on one screen.

Summary of Workplan View capabilities:

- Drilldown from projects through to their activities.
- Show resource assignments across the entire project portfolio.
- Show resource work assignments across single or multiple projects.
- Allows the assessment of which resources are available to carry out a certain task.
- Swap generic resource skill assignments with the actual resources required to do the work.
- Swap out resource assignments based on equivalent skills.
- Filter on activities to show only desired activities.
- Filter on resources to show only desired resources.
- Display six different types of resource charts to help analyze the availability of resources across the project portfolio.

Once an activity is selected, all the resources scheduled to work on that activity appear at the bottom of the screen in the resource chart area. Changes can be made using the mouse to adjust or swap out resource assignments.

Workplan Dataset Attributes

The Workplan tab is associated with an underlying table called Workplan. Changes made in the workplan tab are recorded in the Workplan dataset. In order for the system to interpret the workplan dataset correctly, a number of attributes are used to tell the system how to regard certain specific fields.

These attributes and their purpose are listed in the table below:

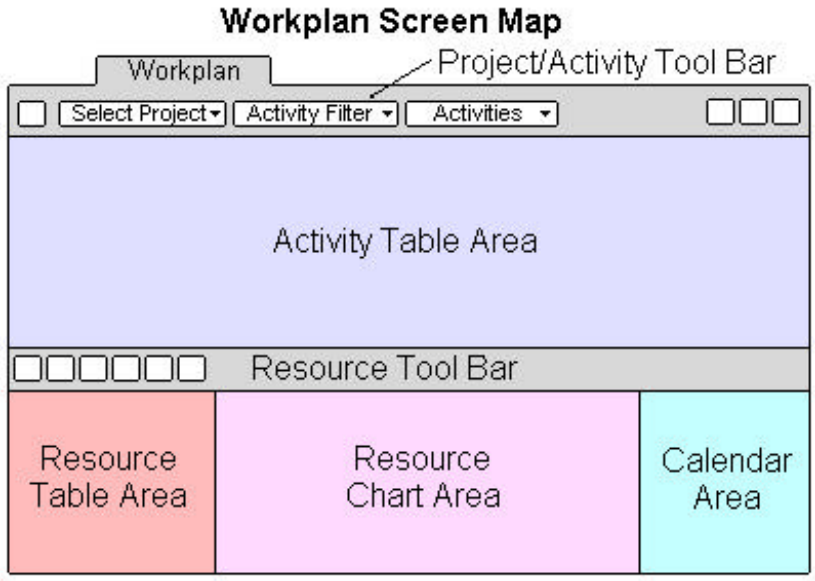
Attribute	Description
WorkPlanResource	Identifies the field containing the resource assigned to a task.
WorkPlanWho	Identifies the field containing the name of the person who last updated the workplan. Audit trail.
WorkPlanTask	Identifies the task field
WorkPlanWhen	Identifies when a task is scheduled to start
WorkPlanPlanned	Identifies the field containing the planned start date for the work
WorkPlanETC	Identifies the field containing Estimate to Complete data
WorkPlanLOE	Identifies the field containing Level of Effort data
WorkPlanStatus	Identifies the field containing the tasks status, i.e. Open or Closed
WorkPlanType	Identifies the field containing work types, i.e. Regular, Overtime or other custom work types.
WorkPlanCD	Identifies the field containing the workplan current complete date
WorkPlanSD	Identifies the field containing the workplan current start date
WorkPlanExtension	Identifies the field containing the workplan extension data
WorkPlanCalendar	Identifies the field containing the named calendar for the task
WorkPlanBS	Identifies the field containing the base hours start date
WorkPlanBC	Identifies the field containing the base hours complete date
WorkPlanBaseline	Identifies the field containing the original base hours
WorkPlanPool	Identifies the field containing generic resource work plan info
WorkPlanLast	Identifies the field containing the last date time was booked
WorkPlanCum	Identifies the field containing number of hours

	posted cumulative to date.
Custom	Used to assign a memory portion in which to store data. This is generally reserved for user defined additional fields, above and beyond the standard fields and attributes already available.

Navigating Workplan View

The Workplan View

The figure below shows a simplified map of the workplan screen layout, marking each of the major components:



Project/Activity tool bar

Remove Assignment. This button will allow a selected assignment in the Activity's table area to be removed. This places the resource back in the pool and makes it available for other assignments during that period.

The next three buttons on the toolbar operate together to narrow down the activity list. First, a project is selected, next an activity filter can be chosen and finally, the activity required can be selected from the last list button.

Select Project. Click on this pop-down list button to select a project. The 'select activity' button's content will depend on this selection.

Activity Filter. Use this button to select an activity filter. The filters displayed in this button are defined in the database tab.

Note: To clear the activity filter button and return to no filter (All Activities) setting, click on the button without selecting a new item from the list. The button will display 'All Activities' and no filter will be in operation.

Select Activity. This list button displays a pick list of activities that are present in the project selected using the select project button. It will also exclude any activities that do not pass the Activity Filter criteria set in the activity filter button.

Project/Activity tool bar - Pool Linking

The concept of linking is to associate a resource assignment to a generic resource. A generic resource is simply a skill requirement. To assign that skill requirement to an activity, a generic resource is created that specifies the skill required to complete the activity. At a later time, the generic requirement can be swapped out with an actual person that has the necessary skill to complete the task. This allows persons not responsible for resource allocation to create activities with skill requirements. Later, a resource manager can allocate a person based on availability and skill to the activity. A generic resource can therefore be thought of as a request for a skilled person, without specifying who should do the task.

Pool Linking is used to swap out a generic resource with an actual person and automatically reduce the quantity of generic requirements on that activity. For example, if an activity requires four accountants to work on it simultaneously for two weeks, a generic resource called Accountants is created. This is applied to the accounting task at 400% Level of Effort (LOE). If Generic Linking is enabled, each accountant that is allocated to that task at 100% LOE will automatically reduce the generic requirement by 100% LOE. This continues until all four accountants have been allocated. The generic resource now shows 0% LOE and can be removed from the activity.

Link to Generic. With this button selected, resources that are swapped with the generic resource will reduce the generic resource's LOE by the amount of LOE allocated to the actual skilled resource.

Unlink From Generic. With this button selected, resources will not swap out their requirement with the generic resource. They will simply be added to the activity as a resource.

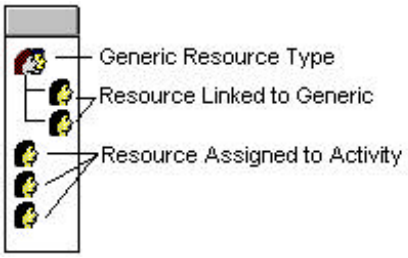
Prompt For Generic Link. With this button selected, the system will prompt to either link the assignment to the pool, or perform an unlinked assignment that does not reduce the pool.

Activity Table Area

This area allows the viewing and selection of the resources associated with the activity selected in the 'Select Activity' button menu. This table contains details about the resources required or assigned to the selected activity.

Table Column Description

Row Header Column - Contains an icon indicating either a resource, generic resource or a linked resource, as shown below:



Employee - contains the name of the employee/resource that is assigned to the task.

Status - Activity status is either Open or Closed. Closed activities can no longer have any hours booked to them.

Start - The start date of the activity.

Complete - The complete date of the activity.

Planned - Original Planned hours for the task.

ETC - The Estimate To Complete field indicates the estimated number of hours still to be worked to complete the task.

LOE - Level of Effort; figure displayed in percentage. 100% = one person working full time on the activity. 400% = Four people working on task full time. 50% = one person working for half their available time on the activity. When the resource is of type Generic, the display shows the quantity of people still required to be allocated to the activity in place of the generic resource. The number is not a percentage figure as with regular resources.

Cum - Cumulative hours booked for this activity by the resource.

Remaining - Remaining hours left to work on the activity.

Actual Start - Actual start date when work was first booked to the activity.

Plan From - Last date hours were book up to.

Calendar - The name of the calendar being used by the resource.

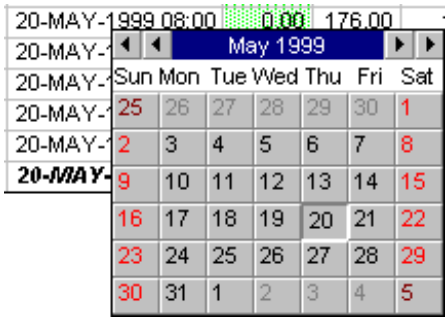
Worktype - type of work performed on the activity by the resource, regular or overtime. Other types can be added using the Actuals Table in the Database tab, definitions view, Type field.

Other Workplan Table Features

Cells in the table with a colored background are usually non-editable fields. That is to say, they cannot be edited in that particular view. Fields with a white background can usually be edited.

The bottom row on the table contains totals for all the above rows that contain relevant numbers.

Date cells will activate a popup calendar when clicked on. This makes date entry much more simple. Navigate through the calendar using the left and right arrows at the top of the calendar to scroll through months and years. While outer arrows change the year, inner arrows change the months. Click on the desired date in the calendar to enter the date into the selected cell.



Resource Tool Bar

The resource tool bar gives quick access to resource allocation and display features of the Workplan view.

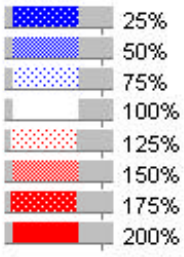
Resource Filter List Button - This tool gives a list of the available defined filters for resources. Resources often need to be viewed based on skills. Filters can be set up in the Database view, Employee, define filter mode to create custom filters to show resources that meet certain criteria.

Show Task - Click this button to display tasks in the Resource Chart Area, for the currently selected resource name(s).

Show Usage - This button enables the Resource Chart Area to display various resource availability charts and graphics.

Display Modes - This button gives a list of the possible types of display for the resources chart. Click on the list to select the display mode required. These modes are:

Conflict - Blue, White or Red bars indicate whether a resource is Available, fully utilized or over utilized, respectively. Graduations between these states are shown as colored shades between the different states. For example, if a resource is being over utilized in one particular time period, the bar will show as Red. If it's solid red, the resource is at 200% overload. If the bar is white with red dots it is less than 200% overloaded. These are only intended to give a guide to availability and conflict. Here is a chart to help understand the different shades of color.

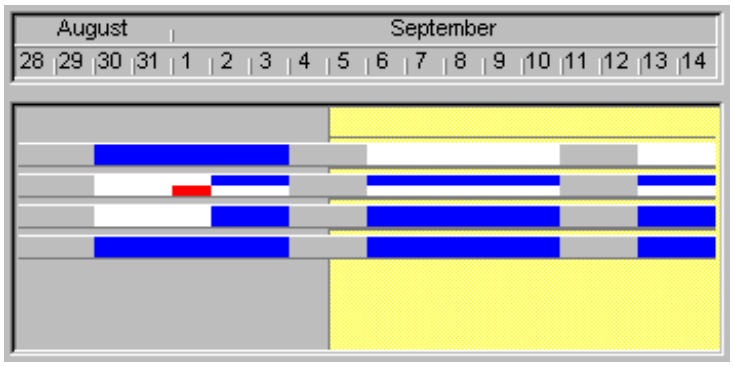


Note: Any figure above 200% will not change the bar color any further.

Usage Histogram

This view uses each bar as a miniature histogram of usage for each resource. Instead of using a shaded color to represent usage, the bar scrolls from Blue, through white, to red. The height of each of these is dependent on the amount of usage or over-usage.

In this view, each row of the graph behaves like a miniature histogram. The height of the bar represents 100% of either availability (Blue), Usage (White) or Overload (Red). The gray area represents a non-working period. The Yellow area is the time period for the currently selected activity.

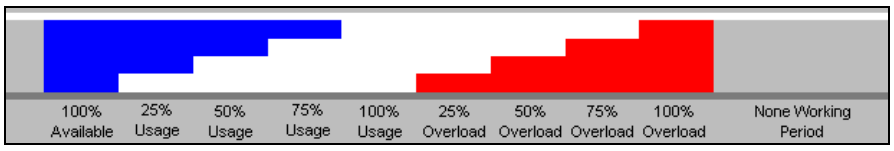


The height of a particular color within the bar represents the percentage of usage or overload, up to 200% usage. After 200% (completely Red), the system does not distinguish more overload graphically. However it does record this number within the workplan table, so higher overloads are represented in the LOE column.

Interpreting the Usage Histogram

Here is an expanded example of the multi-histogram showing 25% increments from fully available to 200% overload. The histogram can be described as a 'rolling histogram' in as much as the white rolls up to the top of the bar as the resource is assigned and as the resource becomes over assigned past 100%, the red starts to roll up over the white.

For convenient illustration, the diagram shows approximate 25% increments, however the bars themselves are 10 pixels high and therefore represent to the nearest 1/10 increment. As stated before, these miniature graphs are designed to offer a guide to resource availability rather than act as a precise reporting instrument.

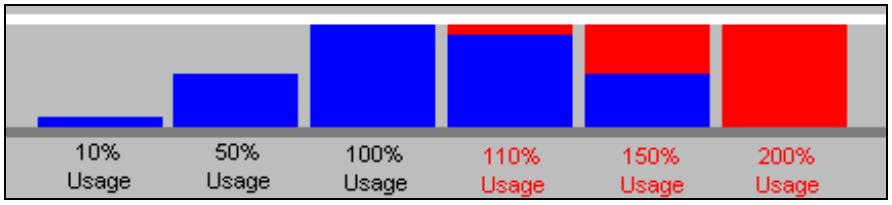


The Usage Histogram

This third view represents the usage of a resource over time. In this case the blue color represents usage and the red represents overload. The histogram scales depending on the amount of usage and overload apply to the resource.

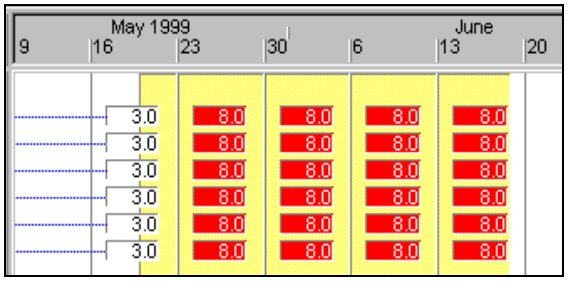
If the resource is only half used over the period, a blue bar will be occupy half the resource bar's height. If the resource is fully committed, the blue bar will occupy the full height of the resource bar. If the resource becomes overloaded a red bar will appear above the blue bar and force the blue bar to occupy a smaller percentage of

the height of the resource bar, even though the blue bar still represents 100%. Here is an example:



Average LOE

This item changes the resource graph into a numeric table containing non-editable cells displaying the figures for average level of effort for each resource working on the selected activity. The display is dynamic and the results are based on the scope of the time scale. If the scale is showing weeks, the figures reflect the daily average. If the scale is showing months, the figures represent the weekly average.



Total LOE

This item shows a similar table to the average LOE table. The cells display figures that show the total usage for a resource on the selected activity. The scope of the time scale determines whether the figures are shown as days, weeks, months or years.

Average Available

This item displays a table that shows the average amount of availability for a resource over the duration of the selected activity. If the resources are fully utilized over the period, the table will not display the cells.

Total Available

This item shows a table of figures that indicate the total availability for a resource over the period of a selected activity. Again, if the resources are fully utilized over this period the chart will not display any cells.

Note: The Yellow area that appears on all of the chart views indicates the start and complete dates for the selected activity. With each selection of an activity, the time scale of the chart view expands or contracts to fit the new start and complete dates.

Using Workplan View

Making a new Work Assignment

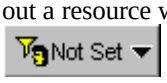
To make a new work assignment follow the steps below:

1. Click on the Workplan tab.
2. Select the desired project using the Select Project button on the Activity tool bar at the top of the Workplan tab.
3. Select the desired activity using the Select Activity button.
4. In the Resource Table area at the bottom left of the Workplan tab, select the resource required to work on the activity.
5. Click the Assign Resource button on the resource tool bar to assign the selected resource to the activity.
6. The resource will appear in the resource table with a default assignment of 100% LOE to the activity. If the level of effort is to be changed, type in a new percentage LOE in the LOE field, e.g. 75%. Numbers entered without the % symbol will be interpreted as total hours in a day. For example, entering 4, will convert to 50%, if the working day is 8 hours.
7. Click the save button on the main toolbar to save the new assignment.

Changing a Work Assignment

To change or swap out a work assignment between one person and another, on an activity, follow the steps below:

1. Click on the Workplan tab.
2. Select the desired project using the Select Project button on the Activity tool bar at the top of the Workplan tab.
3. Select the desired activity using the Select Activity button.
4. In the Activity Table area below the Select Activity button, click on the resource icon row header to select the entire row.
5. In the resource table area at the lower left hand corner of the screen, select the resource you wish to replace the existing assignment with, by clicking on that resources rows header.

   Note: If you need to swap out a resource with one who has the same skills, use the Resource Filter button 

   to select resources that only have the appropriate skills for the task.
6. Click on the Swap Resource button. The software will replace the selected resource in the activity workplan table with the resource selected in the resource table area. The previously assigned resource will be returned to the pool and become available for other projects and tasks.

Note: If the resource you are replacing has already booked hours to the activity, the hours will not be lost. These hours are stored in the Actuals table and are protected. However if the person/resource attempts to book further hours to the activity after being re-assigned, the time card will not accept the new hours. To book further hours, the person would have to be given non-project access to the task or have it temporarily reassigned in order to book further hours to the task.

Deleting a Work Assignment

To remove or delete an existing work assignment, follow the instructions below:

1. Click on the Workplan tab to enter the Workplan view.
2. Click on the Select Project button on the tool bar at the top of the Workplan tab and select the desired project from the list.
3. Click on the Select Activity button and choose the desired activity from the list.
4. Click the row header icon to select the desired resource to remove.
5. Click the Remove Assignment button to return the resource back to the pool.

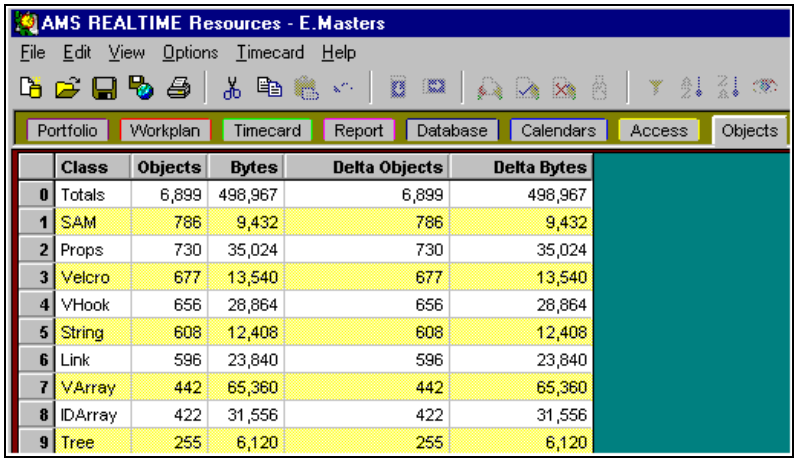
Note: If the resource being removed has already booked actual hours to the activity, the data will not be lost. Time card data is stored in the Actuals dataset and is protected.

Objects Tab

What is Objects Tab

This tab gives a view of the Resources Server statistics. This can be useful if the server is physically inaccessible from the client or is too remote for regular observation.

In the unlikely event of performance problems occurring with the system, these statistics can be used to help track down the source of the problem.


AMS REALTIME Resources - E.Masters
File Edit View Options Timecard Help
Portfolio Workplan Timecard Report Database Calendars Access Objects

	Class	Objects	Bytes	Delta Objects	Delta Bytes
0	Totals	6,899	498,967	6,899	498,967
1	SAM	786	9,432	786	9,432
2	Props	730	35,024	730	35,024
3	Velcro	677	13,540	677	13,540
4	VHook	656	28,864	656	28,864
5	String	608	12,408	608	12,408
6	Link	596	23,840	596	23,840
7	VArray	442	65,360	442	65,360
8	IDArray	422	31,556	422	31,556
9	Tree	255	6,120	255	6,120

The Five columns in the objects table represent different elements of the processes involved in serving the client. The top most row in the table is a totals column that gives a cumulative sum of all the data packet activity between the client and server. These columns are explained below.

Class	Every computer program is made up of blocks of compiled code. These blocks are known as functions. Functions can be gathered into objects known as Classes. The Class column shows the name of the Class that has been used by the client, either during login, or during subsequent activities within the client.
Objects	Objects is simply a general term for items, usually pieces of data that pass between the server and the client. So a single object could be a task record, a timecard record or any other piece of data that is passing between the client and the server. The objects column records the number of objects that have passed between the client and the server.
Bytes	Number of data bytes that have passed between the client and the server.
Delta Objects	Difference in quantity of objects since the last reset statistics operation.
Delta Bytes	Difference in total number of bytes the objects have used since the last reset statistics.

REALTIME Projects 5.2

Overview

The following chapter looks in detail at changes made to AMS REALTIME Projects since the last major feature release and subsequent maintenance releases. These enhancements include:

- Technical Progress Enhancements
- HOWTO's for using Technical Progress
- Field Calculator Enhancements
- Automatic Activity ID Formatting
- Resource Level Of Effort
- Resource Extention Field Attributes
- Python overview.

Technical Progress Enhancement

Sometimes, the requirements for modeling progress go beyond the standard percent complete, estimate to complete, actual complete date and so on. AMS REALTIME Projects has additional capabilities that address some of the more complex and less standard methods of progressing a project.

Technical Progress is used in order to separate 'percent complete' from the 'progress to now date', as in reality these are often not the same thing. For example, a team member may be half way though the allocated time given to complete a task, but has delivered nearly the entire set of deliverables for the task's completion. Therefor, a 50% complete progress maker on the task, whilst being accurate in terms of how long the work has been going on for, does not reflect the true actual progress of the work itself. Some feature enhancements for technical progress have been added to address a further issue with progress.

Description of Enhancement

As of version 5.2, some new flexibility has been added to the technical progress feature. This enhancement allows project managers to enter actual start, actual

complete and Prog To dates on non-work days (weekends, holidays, etc..), as well as working days.

If using the Technical mode to calculate progress, a new equation is used to determine the complete date for an activity:

REM DUR + PROG TO = COMPLETE Date.

This does two things, allows users to determine COMPLETE Date based on selected Calendar while giving the ability to express non-workdays as Actual Start and Actual Complete dates.

HOWTO: Set up the Technical Progress Enhancement

Before attempting to use this feature, there are two settings in the rtp32.ini (rtp.cfg on Unix and Macintosh platforms) configuration file, ABSOLUTEACTUALS and TECHPROGSAVE.

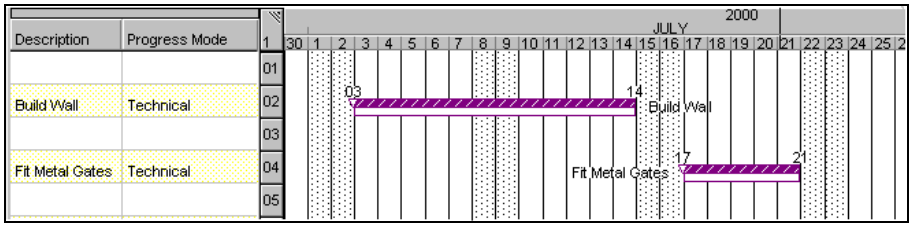
These two switches must be present in the configuration file and set to =Y for the feature to work.

To check and change these settings, open the configuration file using any simple text editor, such as notepad on windows, or emacs, vi or xedit on Unix platforms. On Macintosh machines use SimpleText. Alternatively use the Options editor built into the program.

HOWTO: Use the Technical Progress Enhancement

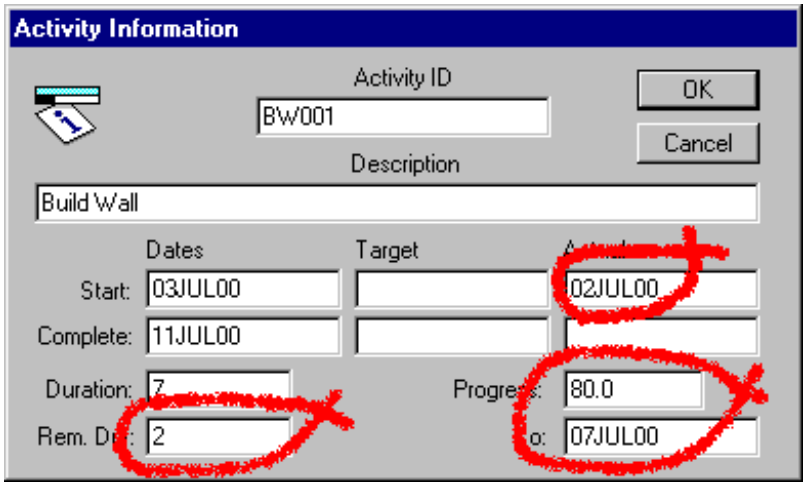
The best way to show this feature is to use an example. In this example a simple construction schedule is used. A task (Build Wall) has been planned to take ten working days to complete.

The task is planned to start on Monday Jul 3rd and complete Friday Jul 14th.



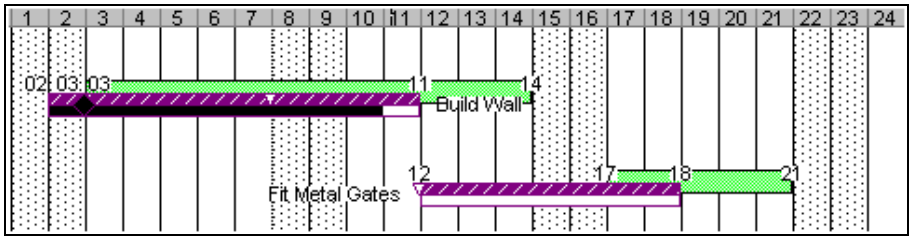
However, Bob, the person assigned to the task, started the work ahead of time on Sunday 2nd Jul, a non working day. To make matters even more interesting, it is now Friday 7th, half way through the original planned work, but Bob knows he only needs two more days of work to complete.

The project manager enters the following into AMS REALTIME Projects to get a true estimate of the complete date for the task. Double click on the activity to see this dialog box.



First the actual start is entered, Sunday 02JUL00. The work started on a non working day. Next the To date is entered, in this case Friday 07JUL00. Then Bob's estimate to complete of two days in entered in the remaining duration field. So, what we've told the system here is that, as of Friday 7th Jul, there are two days of work left to do; and the work started a day early.

What we want the system to tell us is the true estimated complete date based on these facts. Here is the results of this example.



Note how the First activity shows the actual start occurred on Sunday 2nd, and a diamond shows the original planned start for the task on the 3rd. Now look at the Technical progress triangle pointer, positioned at the end of Friday 7th. This points out where we are in terms of the Progress To date. At this point Bob has estimated two more days to complete the task. The progress Bob has made puts the new estimated complete date at the end of Tuesday 11th, with a percent complete of 80%. The Fit Metal Gate task can begin a whole three days ahead of schedule, based on the calculations made by Projects. The slightly confusing issue with this example is that the percent complete bar at the bottom of the activity shows that 80% of the work has been completed, based on a seven day span, not a ten day span.

In summary, the important point about this feature enhancement is that the complete date has been moved based on the following formular:

Prog To date + Rem Dur = New estimated complete date.

Formally, technical progress would calculate either the Prog to value or the Rem Dur and would adjust the end date based entirely on percent complete.

Note: AMS REATLIME Projects also now allows the booking of time on non-working days whether using baseline, duration or technical progress.

Field Calculator Enhancements

Calculated fields in the Projects module have been greatly enhanced to include functions for duration, logical functions, element of cost specifications, project variables, such as TimeNow and the Project Start and Complete dates, error checking and test operators, and comments. Text functions, such as mid, find and substring references, can now be used.

Element of Cost Formula Specifications

Calculated fields that refer to cost fields can now reference separate elements of cost in the same calculation. For example:

Calc = BAC[LABOR] /BAC[TOTAL]

Calculated fields can also be entered using just the equal sign and expression:

= BAC[LABOR] /BAC[TOTAL]

Activity Extension Field Formatting

Decimals

The number of decimals displayed in a calculated field can be controlled by preceding the equation with the **decimals** function. The function below specifies a format of two decimal places. Use Ctrl click to get an edit cursor and enter the decimal function.

Calc = decimals(2), BAC[LABOR] / BAC[TOTAL]

Numeric Summarization

Numeric type Activity **extensions can be formatted** to control whether they roll up to a title summary or not. For example, the number of documents produced on an activity should summarize into the title, but a numeric priority code should not. Use the Control key to get and edit cursor in the Act. Ext Types column, and enter a :N if the numeric field should not summarize to a title activity, or :Y if it should.

Priority	Number:N
Documents	Number:Y

Syntax Checking and Comments

If a syntax error is encountered, AMS REALTIME will place an error position marker before the problem in the field definition.

Calc = Amount * #^# UnknownField

Comments can be added to the end of a field definition. When the pound sign (#) is encountered, everything else is ignored to the end of the line.

Calc = BAC[LABOR] /BAC[TOTAL] # Labor Percentage of Whole Budgeted Cost

Constants and project fields

Project fields can be accessed in calculations. The dataset name precedes the field name (e.g., **project.schedulekey**). **Project.now** accesses the current Time Now date. The table below shows the standard project fields that are accessible.

Calendar names are also available as constants for interpreting working durations. If no calendar is specified with a constant duration, the default calendar is assumed. Duration values for an activity are based on the activity's assigned calendar. For example, defining a **TimeNow** activity extension field as **C=project.now** is a very useful standard field definition.

Project Field	**Description**
Start	Project Start Date
End	Project End Date
Now	Project Now date
GenBaseDate	Base date for generic calendar display
Fiscal	Beginning of fiscal year
Heading	Heading (Title) for project
SubHeading	Sub-Heading (Sub title) for Project
GenMPU	Minutes per unit for generic timescale
DurationFmt	Display format for durations
WeekStarts	Week starts on day of week
CostBin	Cost bins size for this project
IsMaster	Is this a merge-link Master?
user-defined fields	Any user-defined project extensions (all fields are Alpha type).

Duration and Logical Functions

useCalendar(calendarname)	override activity calendar
check (0)	disable type error checking to avoid calculation errors on blank fields
asComplete(1)	result (if date) as complete date
dhm(days, hours, minutes)	span: from numbers
mpd()	number: minutes per day (current cal)
mpw()	number: minutes per week
mpm()	number: minutes per month
days(span)	number: days from span
hours(span)	number: hours from span
minutes(span)	number: minutes from span
number(date or span)	number: from date or span
date(number)	date: from number
span(number)	span: from number

Operators

#	Comment – rest of line is ignored
test ? (truevalue, falsevalue)	If test has a true (non-zero) result, true value occurs, else falsevalue
|	Or list (Vertical bar) – use the first populated value in the list

A Complex Calculation Broken Down into Steps

The user-defined activity field **LateBy** is calculated from this definition:

Calc=check(0), acomp ? (0:0, (project.now - (progto|start|complete|project.now)))

1. The check function turns off the error checking in case the AComp field is a blank. This prevents type errors in the calculation.
2. If the Acomp field has a non-zero (true) value, the activity is complete and it doesn't have late status. This returns a 0 days late value.
3. If the Acomp field has a zero value, it isn't finished yet, so the number of days late is calculated as Time Now minus ***x***, where ***x*** is determined by:

If there is a ProgTo date, x = ProgTo. Or, if there is a Start date, x = Start. Or, if there is a Complete date (e.g., a Complete milestone) x = Complete. Or, if none of those fields are populated (e.g., Title) x = Time Now. The activity is complete and it is no longer late

String functions

Contatenation

When used with alpha fields, the plus sign is a **concatenation** operator, which can append the contents of fields and/or literal strings. Literal string s should be enclosed in single quotes. Again, you need to use Ctrl click in the Act. Ext. Type column to get a cursor and enter the field definition.

Calc = ActID + ': ' + Description

If a syntax error is encountered (such as you typed a field name wrong), AMS REALTIME will place an error position marker before the problem in the field definition.

Calc = ActID + #^# ":" + Description

Substrings

Functions have been added to manipulate strings. To calculate a substring from a field, place the start and length in square brackets after the field name, separated by a comma. For example, Description[5,7] will start at character 5 and return 7 characters in length. If a negative length is indicated, it means "to the end of the string" so that a variable length can be used.

A substring can also be extracted from a string with the MID function, which requires the field name, the start point, and the number of characters as passed parameters. A negative length indicates all characters to the end of the string. The function will return a blank if a result can not be calculated.

String Searches

The FIND function will search and return the location of a specific character (or string) within a string. This is a case sensitive compare. If The function will return 0 if the character (or string) is not located.

In the follow examples, assume that the Description field contains **TheQuickBrownFox**.

Function	*Result*
Description[4,10]	**QuickBrown**
Mid (description,4,10)	**QuickBrown**
description[4,-1]	**QuickBrownFox**
mid (description,4,-1)	**QuickBrownFox**
Find(description, 'B')	**6**
Find(description, 'b')	**0**
Find(description, 'B', 10)	**0**

Automatic Activity ID Formatting

Formatted Activity IDs that are created when the AutoID configuration setting is Y can now be defined by a template string with the unique number inserted. A starting number can be specified, and this number is updated each time it is used.

When the Project Extensions are defined as in the example shown to the right, the next Activity ID that will be created is **RTP-217**.

After the activity has been created, the NextAutoID field will be updated to 218. The FormatAutoID string can be any text format string, where the %d is replaced with the current value of NextAutoID.

Prj. Exts.	Prj. Ext. Values
ScheduleKey	
ProjectManager	
ProjectName	
%CD Player	cdplayer.exe
%Calculator Info	word C:\ams dev\project
%Netscape	C:\Program Files\Netsc
%Editor	notepad
%Calculator	calc
NextAutoID	217
FormatAutoID	RTP-%d

Resource Extension Field Enhancements

A **resource extension field** can also be defined to calculate the **total usage** for a resource in the project. The Res.List field (a calculated field in the activity table that lists the resources assigned to the activity) can be configured to show **the average LOE** (Level-of-Effort) for each resource in the list. **Resource attributes** have been added to allow resource extension fields to have non-specific names and locations. Attributes are Summary, Element, ShowLOEFlag, and UsageTotal.

☝ A VERY IMPORTANT NOTE!

All projects that use Elements of Cost need to be updated to set the Element attribute to the field used to relate a resource to an element of cost. This field no longer has to be named Element, but needs to have the Element attribute set.

Resource LOE in ResList

This displays a resource's average level-of-effort in parenthesis next to the Resource ID in the calculated Res.List field. The LOE is calculated form the current resource plane only (i.e., Planned, Actual, Baseline resource usage).

Res. List
B(1.00), F(0.50), M(0.50), CT
B(1.00), F(0.50), M(0.50), CT

The LOE will be calculated and displayed for only those resources which are identified by a Resource Extension field that has a true value. In the example at the right, the Resource Extension field ListAmount is used to select the resources which will have a LOE calculated and displayed. Resources which have a Y in the ListAmount field will have their average LOE displayed; those with N in the ListAmount field will not display LOE.

Res ID	Res Desc	ListAmount
B	Bob	Y
F	Fred	Y
M	Mary	Y
P	Pamela	Y
XC	Computer time	N
XL	Lab time	N
CT	Contractor Tom	N

Resource Extension Field Attributes

The extension field used for this purpose is identified by Resource Extension type of Logical and a Resource Extension Attribute of ShowLOEFlag.

To control the number of decimals in the ResList (LOE), add the configuration switch **RzLoeDecimals=#** to the configuration file, where # is the number of decimal places.

Res. Exts.	Res. Ext. Types	Res. Ext. Attrs.
Resource Summary	Alpha	Summary
Skill	Alpha	Element
ListAmount	Logical	ShowLOEFlag
HoursUsed	Number	UsageTotal

Progress Enhancements

Automatic progress types have been added so that Remaining Duration is automatically updated to the Time Now date: use AutoDuration, AutoTechnical, or AutoBaseline.

Rollups of **Technical progress** type activities will give priority to Progress values (rather than Remaining Duration) if RuPrgTech=Y in the configuration file. This allows for a more accurate summary when Progress is maintained separately from Remaining Duration.

Other Configuration File Enhancements

The configuration switches MERGEVIEWS=Y and MERGELINKVIEWS=Y will load Views from each individual project schedule. Merge-linked views will be stored only in the merge-link schedule, and will not be written back to each individual component schedule. If the merged view references an field that is not defined in the untitled.arp template, the matching criteria will not be set. If a standard set of fields are defined and used, which is recommended, this will not be a problem. System standards are critical for any enterprise solution that uses multiple project techniques to operate correctly.

Python API

An Introduction to Python in AMS REALTIME

Python is an easy to learn, powerful programming language that is interpretive and interactive in an object-oriented framework. It is often compared to Tcl, Perl, Scheme or Java. Python scripts can interact with many programs and operating systems. It has efficient high-level data structures and a simple, but effective, approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpretive nature, make it an ideal language for scripting and rapid application development in many areas.

The Python interpreter and the extensive standard library are freely available in source or binary form for all major platforms from the Python web site, **http://www.python.org**, and it can be freely distributed. The same site also contains distributions of (and pointers to) many free or inexpensive third party Python modules, programs and tools, and additional documentation.

The Python interpreter is easily extended with new functions and data types implemented in C or C++ (or other languages callable from C). Python is also suitable as an extension language for customizable applications. Python syntax is similar to C, with modules, classes, exceptions, very high level dynamic data types, and dynamic typing.

For a description of standard objects and modules, see the Python Library Reference document. The Python Reference Manual gives a more formal definition of the language. To write extensions in C or C++, read the Extending and Embedding and Python/C API manuals. There are also several books covering Python in depth. For a basic start in Python, try Learning Python, written by Mark Lutz and David Ascher, published by O'Reilly and associates. There are also tutorials that can be found on the web.

All AMS REALTIME products embed the Python language engine, and they export modules that are usable from the embedded Python engine. This allows end-users with programming ability to customize their off-the-shelf software by programming Python scripts to help manage repetitive processes, or automate event drive processes, such as business rule validation and automatic email messaging. Just like AMS REALTIME, Python runs on Windows, Macintosh and Unix platforms.

A key advantage to customizing AMS REALTIME with Python is that when the software is upgraded to a new version, user-defined scripts will not be overwritten, and will still function with the new software.

The Python API User Guide

Users interested in using Python to enhance and customize the capabilities of the AMS REALTIME suite of application should obtain a copy of the Python API Programmers Guide. This document focuses specifically on using Python with AMS products and also gives details about the TDB (Text DataBase) API and how Python interacts with it

Python in AMS REALTIME

All AMS Realtime products embed the **Python** language engine, and they export modules that are usable from the embedded Python engine. Python is a simple and powerful high-level object-oriented programming language created by Guido van Rossum. Python can be freely distributed and available in source form on many platforms, including Unix platforms, Windows and Macintosh. Visit the Python Language website at **www.python.org**. The documentation that comes with Python includes a tutorial. There is a Python newsgroup, comp.lang.python, an associated mailing list, several Python Special Interest Groups and much more.

Python allows end-users with programming ability to customize their off-the-shelf software and program in business rules and event-driven processes. For example, when a Save occurs in a project, a Python script can check a calculated field that contains slip, and if slip is more than a specified amount, an email notification can be automatically sent. Python can also be used to automate repetitive processes, such as copying the contents of one activity field into another after data import. One advantage to user-defined Python scripts is that when the software is updated, the user defined scripts will not be overwritten, and will still work with the new software.

Python can add buttons and menus to any of the AMS REALTIME software products. Some standard Python scripts will be included with version 5.2. They will not be automatically turned on, because they are dependent on certain fields and definitions. However, we will provide the specific requirements, a sample database and project, and instructions for incorporating these Python scripts.

The standard 5.2 scripts include automatic email notification on project save if activities are complete or have slipped more than 5 days, data validation options, view that automatically update with Time Now, and a button that provides a popup selection list of template activities. Buttons can also be added to Projects to connect to the AMS REALTIME database, set exchange options, commit project plans, and update projects with status and actuals.

An Enterprise Server Python script checks the total of each user's actuals for the given period and compares it with the total number of actuals that the user should report. If it is under the required amount, an automatic email notification is sent.

All of the AMS standard 5.2 release Python scripts come with a standard header block that details what each script does, everything that is required to make each script work (including required fields, configuration settings, etc), a basic psuedocode description, and a history of changes that includes the programmer name, date and change. In addition, all code has an extremely verbose English comment line along the right side of the script that makes it is easy to tell exactly what the script is doing and where potential custom changes should be made.

See Appendix A of this document for the standard Python scripts that will be released with version 5.2.

Python Files

By default the AMS Program's use the command path to locate the startup.py and other python source files. For example, the startup.py file is placed in the program executable directory and the program looks in there for the startup.py in order to load any python scripts required.

However a configuration switch has been added to the AMS REALTIME programs that allows the user to define where their python files are actually installed. This has been done to allow python files to be stored away from the program directory, in a directory of the user's own choosing. This reduces the risk of customized files being stomped on during a future upgrade of the system.

The configuration switch **PYROOT=** has been added to the rtp32.ini configuration file.

Example:

If the user has created some python scripts and placed them in a directory called mypyfiles, the PYROOT setting would look like this;

PYROOT=C:\PROGRA~1\AMS REALTIME\PROJECTS\MYPYFILES

The startup.py that is to be used by the system should reside in the python root directory.

Note: Always use an absolute path with this setting. Relative paths can not be guaranteed to work.

Glossary